

The **MINING** *CONGRESS* *JOURNAL*

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Cooperation Between Capital and Labor in Italy

Anthracite Takes a Turn for the Better

Coal Production in Ohio, 1933

Methods of Permanent Roof Support

A Review of Safety in Coal Mining

Flotation of Metallic Gold

**Classification and Tabling of Alabama Red
Iron Ores**

Contributors

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B. S. Followill, E. S. Leaver, J. A. Woolf, Reamy Joyce,
R. H. Morris*

JUNE
1934



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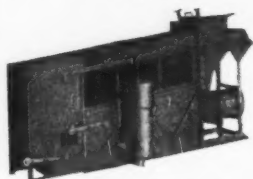
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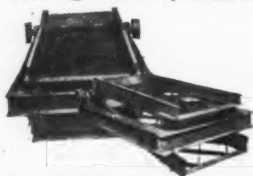
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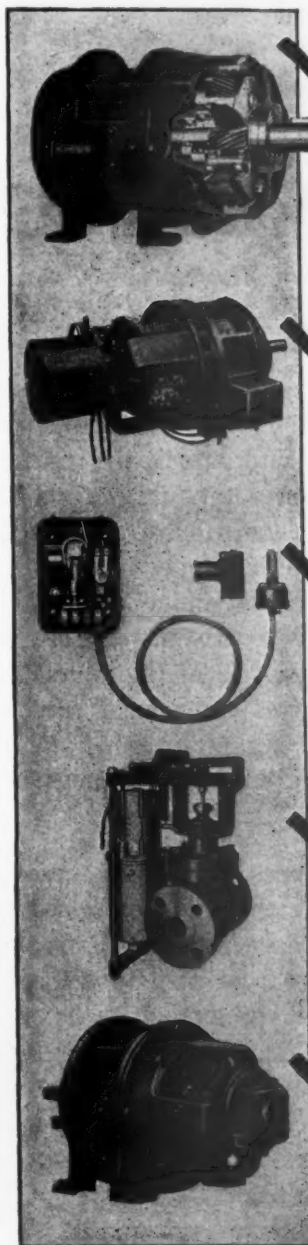
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LIBERTY



"ETERNAL vigilance is the price of liberty." Liberty has been defined as the right of each individual to do any and all acts excepting only such as might interfere with the rights of others. The right of every individual to do with his own exactly as he pleases so long as he does not interfere with the similar right of his neighbor.

His own activities and the property created thereby are his own, subject only to the taxing power of the state for the purpose of providing governmental determination and protection of those rights.

That superior right is determined by a majority of the individuals of a commonwealth and is changed from time to time as public interest may seem to require. Such changes should be made by a majority if representative government is to be maintained. The power of a minority to control is un-American, vicious, and threatens the constitution which is the very foundation of our Government.

Whenever any citizen, in order to sell his service, is forced to join a union, his liberty is gone. Those who do so willingly, as a means of self betterment, are without question entitled to do so, but the liberty of those who are forced to do so is destroyed.

Slaves may be submissive, they may even be contented, but they are still slaves. A nation of slaves or a nation controlled by slave drivers is not the nation for which our forefathers fought.

Any attempt to force any person to join a union against his will is an effort to uphold tyranny. Any effort to control government through a minority is an effort to uphold tyranny. Any effort to control industrial operations through strikes is an effort to create tyrannical control and will in the end lead to revolt.

The writer believes in organized labor but insists that it shall become responsible for its acts, that it shall respect and abide by the law, that it shall respect the rights of those who do not choose to join its ranks and, if its service to labor is not of such advantage as to induce membership without coercion, that it should so amend its activities as to secure support without coercion.

At this time the returning prosperity of the nation is being threatened by innumerable strikes in various parts of the country. Billions of the taxpayers' money have been devoted to efforts to make employment and prevent want and destitution. These expenditures have

created a demand for production which set the wheels of industry in motion and provided employment.

At the first sign of returning industrial prosperity these men, by strikes, block the way to returning prosperity. And now it is announced that on the 16th day of June, unless before that time the steel industry shall surrender liberties guaranteed by the Constitution of the United States, a nation-wide strike will be made effective by the workers in that industry.

The purpose sought is not better wages nor shorter hours, nor better living conditions.

The purpose of this strike is to secure domination by organized labor; to force every man employed in the industry to pay tribute to labor leaders; to destroy the liberty of thousands of workmen who lack the courage to defend themselves against these demands in the face of lost employment and the derision of fellow workmen against them, their wives, and their children.

Section 7(a) of the Recovery Act was put into the act at the demand of a minority and now promises to nullify all of the advantages of Government bounty through a threatened nation-wide strike.

This section is being construed as furnishing authority; the present emergency furnishes the opportunity and the destitution of thousands of workmen will furnish the penalty for carrying out this dastardly proposal, with dues, and dues only, the end being sought.

The writer warns labor leaders to beware!

Public sentiment will particularly disapprove a nation-wide strike in a great industry at this time of business depression.

Our people are patient, long-suffering, and kind, but they will rise up and destroy any minority which seeks through concerted action to destroy individual liberty and to halt the return of prosperity.

Surely President Woodrow Wilson was right when he asserted that *"the concerted action of powerful bodies of men shall not be permitted to stop the industrial processes of the nation."*

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A Journal for the entire mining industry published by The American Mining Congress

Social Legislation

IN THE last days of the present session there is definite possibility that measures of so-called social value, of serious portent to industry, will be passed by Congress.

The push-over for this legislation is the serious situation developed through the threatened strikes of the textile and steel workers.

The mining industry, through The American Mining Congress, has protested vigorously against this legislation. In a resolution submitted to the President and to Congress it pointed out that "legislative proposals looking to the substitution of governmental management and control of industry * * * threaten our institutions and destroy confidence * * * are calculated through the stirring up of internal strife to destroy the productive efficiency of our industrial units and their ability to continue to bear their responsibilities for the welfare of those dependent upon them and for the tremendous burden of taxes imposed upon them."

There is daily evidence that this statement is correct. The troubles of the past few years are serious, but are not sufficient to warrant abandonment of fundamental principles.

Coal's Convention And Exposition

NOT since 1930 has there been such optimism as that displayed at the recent convention and exposition for the coal industry held under the auspices of the Coal Division of

The American Mining Congress at Cincinnati. Four hundred and thirty-one companies, representing the major tonnage of the country and every producing district, sent hundreds of men to participate in the discussions and view the exposition. Operators were keenly alert for information as to ways and means to meet mounting production costs, and the program and the exposition furnished this information in plenteous measure.

The Copper Code

AFTER months of negotiating, the copper industry has at last arrived at a happy meeting of minds that has produced agreement between its component parts and Govern-

ment officials, which has produced a Code of Fair Competition.

The problems that beset this industry were, and still are, many and extremely complicated. The code as agreed upon is hailed in some groups as the bright ray of light for copper; in other groups as impossible of enforcement and therefore only complicating an already serious situation.

The huge surplus stocks of copper, the ability to produce in great volume, the allocation of tonnage, the

competition from foreign producers, all presented problems of great magnitude, and those leaders in the industry who have been responsible for the successful working out deserve the complete plaudits of their colleagues and the cooperation of each group in giving the adopted code a real opportunity to succeed.

Collective Bargaining

PRESIDENT GREEN, of the American Federation of Labor, in commenting upon the Toledo strike, said "it is bound to have a repercussion in all industrial centers and

to inflame the minds of workers everywhere." We agree. But not in the sense that Mr. Green meant to convey.

Mass psychology is never tempered. Brute force usually dominates the mass. The Toledo strike and those of similar calibre throughout the country engender the worst possible element in American life. They are a permanent disgrace to the labor leadership, and they put to shame the much abused phrase, the by-word of union labor, "collective bargaining."

Until union labor shall recognize the real meaning of collective bargaining, until it shall be willing to substitute that bargaining for brute force, until its leaders are able to bring intelligent leadership rather than mass force to secure for labor those things that it believes, and many concede, it is entitled to—until then, and not until then, should it be recognized.

Bargaining is not achieved at the point of a gun. And "collective bargaining" presupposes two parties on opposite sides, presenting facts, negotiating an agreement. The present labor situation inspires little confidence in its leadership.

The Mining Industry

WHAT is it? Of what composed? We speak of "the mining industry" as if it were one enterprise. Yet within that inclusive term there are included such gigantic industries as coal—bituminous and anthracite—produced in

22 of our 48 states; copper, lead, zinc, silver, gold, iron, stone and gravel, clays, sulphur, aluminum, potash * * * to mention some of the larger groups.

These industries employ, in normal times, 806,000 men; their annual payroll is \$1,083,640,000; the taxes paid by them for the upkeep of government is staggering (in 1928, \$116,888,591). Their products are found in practically every state in the Union; they enter into and form the base for an amazing proportion of our industrial life; they furnish, in their raw state, 58 percent of the total tonnage hauled by the railroads.

Some day this sleeping giant will awaken to its own strength, will coordinate and centralize its force and power, and when the day arrives will dawn a new era of industrial thinking. The success of the mining industry is the basis of progress in all industries.



Cooperation Between Capital and Labor in Italy

By CHARLES WILL WRIGHT *

THE three big steps that have been taken during the past 12 years of Fascist regime in Italy toward bringing together the principal productive forces, Capital and Labor, into cooperative organizations under Government supervision are:

I. The enactment of the *Law on Syndicates* in 1926, followed a year later by a *Charter of Labor*. These are based on a code of fundamental and economic principals, which gives labor a living wage and provides for the settlement of controversies through labor courts and eliminates strikes and lockouts.

II. The establishment of *National Confederations* for labor and industry and laws to regulate the relations of the workmen with industry as well as among the industries themselves, in the interest of the nation, and a *National Council of Corporations* to supervise these confederations.

III. The decree for *Obligatory Consortiums* or corporative associations to unite the Italian industries for the purpose of regulating and disciplining both production and competition and to coordinate their activities in the interest of national economy.

* U. S. Bureau of Mines.

I. THE LAW ON SYNDICATES

The first big step, the *Law on Syndicates* of April 3, 1926, was discussed in an article, "Italy's 'New Deal' for Labor," by the author, published in the March issue of *THE MINING CONGRESS JOURNAL*.

The basic ideas involved in this law are: (1) the voluntary character of individual membership in the syndicates, (2) legal recognition of the syndicates, and (3) the express prohibition of strikes and lockouts and the compulsion of utilizing the labor courts for the solution of all disputes.

In the interest of the public, it became necessary that the organization and internal constitution of the syndicates should be rendered capable of fulfilling adequately its responsibilities. These organizations were therefore called upon to establish governing administrative and controlling bodies detailed to bring their statutes and regulations into harmony with the terms of the new law.

The local syndicates for the individual workers and the individual employers or firms were combined into provincial unions and these in turn into national confederations.

II. ESTABLISHMENT OF NATIONAL CONFEDERATIONS

The object of the second step is to unite all related industries and the workmen in those industries into responsible organized groups of confederations, of which there are 13. They are: General confederations of (1) industry, (2) agriculture, (3) commerce, (4) banking, (5) land transport and inland waterways and (6) maritime and air transport. These first six are employers' associations and are followed by six corresponding workers' associations: National confederations of (7) industrial syndicates, (8) agriculture syndicates, (9) commercial syndicates, (10) banking syndicates, (11) land transport and inland waterways syndicates, (12) seamen and airmen. The last, (13) national confederations of professional men and artists, is an association of persons following the liberal professions.

THE NATIONAL COUNCIL OF CORPORATIONS

The liaison between the confederations is maintained by the *National Council of Corporations*. This is a composite body having the Prime Minister as chairman and including certain Cabinet Ministers, a number of high state officials, delegates of the various legally recognized syndicates (the representatives of the employers and the workers being in

equal numbers, and 10 experts. It is divided into a number of sections, each dealing with a particular branch of industry of commerce. While the various confederations represent the joint interests of a whole class of employers or workers, the sections of the National Council of Corporations group employers and workers together. It is the council's duty to study conflicts of interests, the possibilities of expansion and development, costs of production and so on.

Coordinating all the various activities contained in the framework here outlined is the Ministry of Corporations, which acts as a kind of superliaison organ.

MINISTRY OF CORPORATIONS

The task of the Ministry of Corporations is to coordinate and discipline the work of the syndicates, federations, confederations, and eventually the corporations and private collective agreements, where the various organizations cannot agree of themselves, and give approval to and provide for the publication of the contracts actually concluded, approve the statistics of the various unions, etc. The whole system is still in process of evolution and it will require time to get into full operation.

The fundamental principal is that a dispute between an employer or group of employers and a body of workers must never be allowed to degenerate into a suspension of production in which the sufferers are not only the parties directly interested, but the community at large which is unconnected with the dispute.

III. OBLIGATORY CONSORTIUMS

The third and last step, which is to unite the Italian industries for the purpose of disciplining production and competition, is now being taken, and most of the large industrial corporations or companies are already united in their respective consortium and are building up effective forces and coordinating their activities for the benefit of themselves as well as for the entire nation. The essence of all of this is to establish industrial self-government under Federal supervision.

It is to present briefly what Italy is doing, particularly for the metal industries, that this article is written. Let us first see what this law of July, 1932, for obligatory consortiums means to Italian industries. It is stated that the action of the government will be limited to compelling all operators to associate themselves in a consortium with all others in the same branch of production. At this point the compulsory or obligatory nature of the state action will stop. The rules under which the different consortia will function are left to be drawn up by the respective groups of participants. The authorities avoid as far as possible prescribing details and laying down minute directions for the operation of the consortiums, even though participation in them is compulsory. Any internal dissensions, that may arise or inability to secure unanimous adherence to any consortium and its rules on the part of members mutually belonging to it, will call for the intervention of the General Industrial Confederation.

In the published text of the law are the following statements: "The constitution of an obligatory consortium will take place when:

(a) Such a consortium is desired by 70 percent of the total number of companies engaged in any individual line of production and which represent 70 percent of the total production and where failing 70 percent of the individual producers at least 85 percent of the total production is represented.

(b) When the government believes that the constitution of such a consortium will serve the general economic needs of the country for the purpose of more rational technical organization and more economic production."

Such consortiums may not be formed for a period longer than five years. The request for the constitution of an obligatory consortium must be made to the competent minister through the confederation interested, which will be obliged to forward the request to the minister accompanied by its suggestions. The request must be accompanied by a scheme of organization, which will indicate the line to be followed and the methods to be employed as well as the ends to be gained.

The rules and regulations of the consortium, including civil sanctions for the transgressions of these rules, the internal organization and the details of representation within and the functions of the consortium must be approved by a majority vote of the percentage of interested parties. These rules will be approved by royal decree on the proposal of the interested ministers.

These statutes must include the constitution of a Board of Appeal, which will have the right to annul or to modify, upon the complaint of the interested parties, the decisions of the consortium which concern the assignment of quotas of production or which otherwise affect individual members of the consortium. This Board of Appeal shall be composed of three members, one of whom will be named by the president of the consortium, the other by the complainant and the third chosen by the other two, or failing this by the president of the tribunal of the district in which the consortium has its headquarters.

The consortium shall communicate to the competent minister its decisions relative to all its actions and any other matters which may be requested.

Whenever the operation of the consortium does not achieve the desired ends the competent minister may send to the consortium, through the interested confederation, a warning to modify its activities.

The said minister, if the warning is not obeyed, may, within a term fixed by him by decree, remove responsible officers of the consortium and provide for their replacement.

Further, the interested minister on his own initiative, or on the suggestion of the interested confederation, shall have the right to delegate a representative to attend all directive meetings of the consortium.

A consortium may be suppressed before the end of the term for which it was established by royal decree when its existence, in the opinion of the government, no longer conforms to the general interest of the country. From such a decision there shall be no appeal.

For the purpose of coordinating the activities of obligatory consortiums with those of existing voluntary consortiums, the latter, under whatever names they

may exist, must immediately transmit to the interested ministers copies of any of their articles of incorporation or their rules which control the economic activity of their members and must likewise communicate any future modifications.

CONSORTIUMS FOR THE MINERAL INDUSTRIES

Although this law was issued in July, 1932, and soon afterwards, consortiums were formed for the oil and steel industries, many of the industries have not as yet presented their request for constitution, and the decrees for certain major industries have only recently been published, such as those for the silk industry and that of the cotton industries which was issued in March, 1934.

Of particular interest to the mining industry is the royal decree, December 11, 1933, No. 1699, regarding the sulphur industry. This stipulates that all sales of sulphur must be through a central sales office. Sulphur products are classified according to source, namely, Sicilian, Marche-Romagna and Calabrian. The sales office must indicate source of sulphur. Any sale not made through the central sales office is in controversy and is penalized. The sales office assumes no responsibility for quality. The sales office is responsible for the transport and insurance of the sulphur from warehouse to consumer.

Production quotas for each district are based on the last three-year average. Each producing mine must indicate: (1) Amount received from sales of sulphur, (2) cost of production, (3) net profit per ton, equal to sale price less cost, (4) provisional sales price and average final price per ton sold or consigned.

This consortium is responsible for the protective agreements, fixing territorial selling areas and prices with the American producers which have been mutually beneficial in the past.

Regardless as to whether an industry has formed a consortium, the government, in cases of need, has been ready to extend relief in order that the industry may continue to operate. In May, 1932, a royal decree was issued extending relief to crisis in the lead-zinc, antimony and lignite mines in Sardinia. To maintain a specified number of workmen employed during the fiscal year of 1932-1933, the government appropriated 4,000,000 lire, 1,000,000 of which is made available each three months, starting with September 30, 1932.

This relief was to be suspended at the lead-zinc mines in case the market price for lead or zinc exceeded 16 pounds sterling a ton. This did not occur and the full amount of this relief fund was expended. Thus these mines were tided over their crisis so that now they are continuing operations without any government subsidy.

CONTROL OF PLANT CAPACITIES

Another important decree was issued in May, 1933, which sets forth regulations for government control of the establishment and enlargement of industrial plants.

The erection of new plants and the enlargement of existing industrial plants are subject to authorization by the Royal Government. Most of the principal industries are listed and those of the mineral industries that are included

(Concluded on page 24)

ANTHRACITE

Takes a Turn For the Better

By EDWARD W. PARKER*†

THE recession in the demand for and production of anthracite which followed the strike in the winter of 1925-6, and which the depression starting in October, 1929, accelerated in marked degree, apparently reached its peak in 1933. True it is that the output for the calendar year 1933 was not quite equal to its immediate predecessor, but the decrease was so relatively small as compared with the average annual decrease in the six years from 1926 to 1932, that the industry seems justified in having assumed that the tide was about to turn and is taking heart for the future. The justification for this feeling of optimism appears to be strengthened by the record established in the first quarter of the present year when the visit of "an old-fashioned winter" spurred production and consumption to an activity that had not been experienced in a decade.

Shipments of anthracite as reported by the originating carriers to the Anthracite Institute amounted in 1933 to 43,022,220 net tons, as compared with 43,848,868 tons in 1932, the decrease being 826,648 net tons or slightly less than 2 percent. In 1926 the shipments had amounted to 73,442,292 net tons, compared with which the shipments in 1932 showed a decrease of 29,593,424 tons or just over 40 percent, and an average loss of approximately 5,000,000 tons a year. However, in the first quarter of 1934, thanks to weather conditions more favorable to the fuel-producing industries, production took on a new lease of life. Shipments for the three-months of January, February and March of this year amounted to 15,743,619 net tons, as compared with 10,837,482 tons for the same period in 1933, an increase of 4,906,137 tons, or 45.3 percent. For the coal year, April 1, 1933, to March 31, 1934, which must not be confused with the calendar year mentioned above, the shipments amounted to 47,927,756 net tons against 43,638,252 tons for the preceding twelve months, an increase of

4,289,504 tons or 9.4 percent, the first increase for coal year or calendar year since 1926.

In summarizing the foregoing, it must be borne in mind that the anthracite industry is one, among a very few, in which there was no reduction in wages and which, because of high operating costs, was unable to make adjustments that would have lowered the price of its product and placed it in a more favorable competitive position with other fuels. The price reductions that have taken place in the past few years have only been made possible by increased mechanization and by concentration of production in the lower cost units. Increased costs of bituminous and oil in recent months have brought the prices of these fuels to a level where the spread between them and Anthracite has been narrowed and the competitive position of Anthracite correspondingly improved.

It appears quite demonstrable from the record of the last half of the winter of 1933-4 that anthracite, Pennsylvania anthracite, is the one fuel upon which the ordinary householder can rely to combat such extreme weather conditions. Numerous instances have been reported where other fuels failed to meet the requirements. Some householders, lured by the temptation of promised relief from the task of shoveling coal into the furnace and refuse from the ashpit, as well as a reduction in the cost of heating their homes found, in a number of cases, low temperatures had so congealed the fuel that the regular flow from tank to burner was difficult to secure, that this condition was aggravated by interruptions to power lines serving the oil burners, and that the cost increased instead of decreasing. In the case of those who had installed gas heating apparatus conditions in many instances were even worse than with the oil burners. In several cities, according to press reports, gas companies were compelled to defray the expenses of their customers in hotels until the delivery and service pipes could be thawed out and the pressure restored to a point where normal operation of the gas heating apparatus was possible.



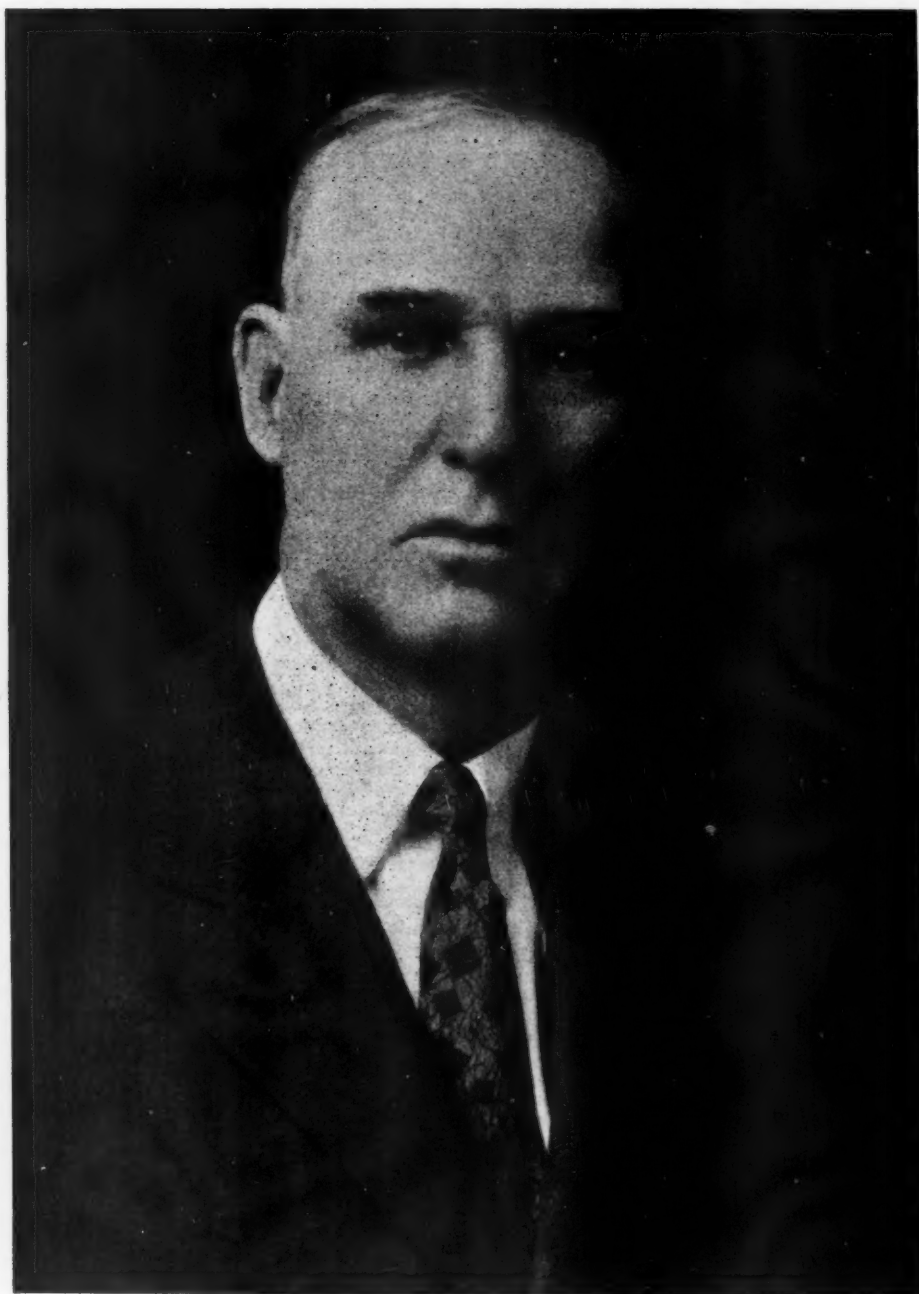
Users of coke were scarcely less fortunate. In a number of communities the supply of coke for domestic use ran short, for under such conditions as obtained last winter the furnace that uses coke has a rapacious appetite and frequent feeding is necessary. Also under such conditions expensive damage is done to grate bars and other portions of the heating equipment due to the extreme and fluctuating temperatures in the combustion chamber.

The sudden severity of the weather of the past winter was not without its lesson to the anthracite producing and distributing interests. No instance was reported of any communities chiefly dependent upon anthracite having suffered from a lack of fuel, but in order to meet the demand reserves in the storage plants of the larger companies were depleted almost to the vanishing point. It has been clearly demonstrated that it is the part of wisdom to maintain a sufficient supply of anthracite above ground against emergencies of a similar character. It is to be hoped that dealers and householders will have similarly learned the advantage to be gained in following the example of the ant and lay in a goodly portion of the requirements during the summer months. Such action together with the refilling of the storage yards should have an effect on

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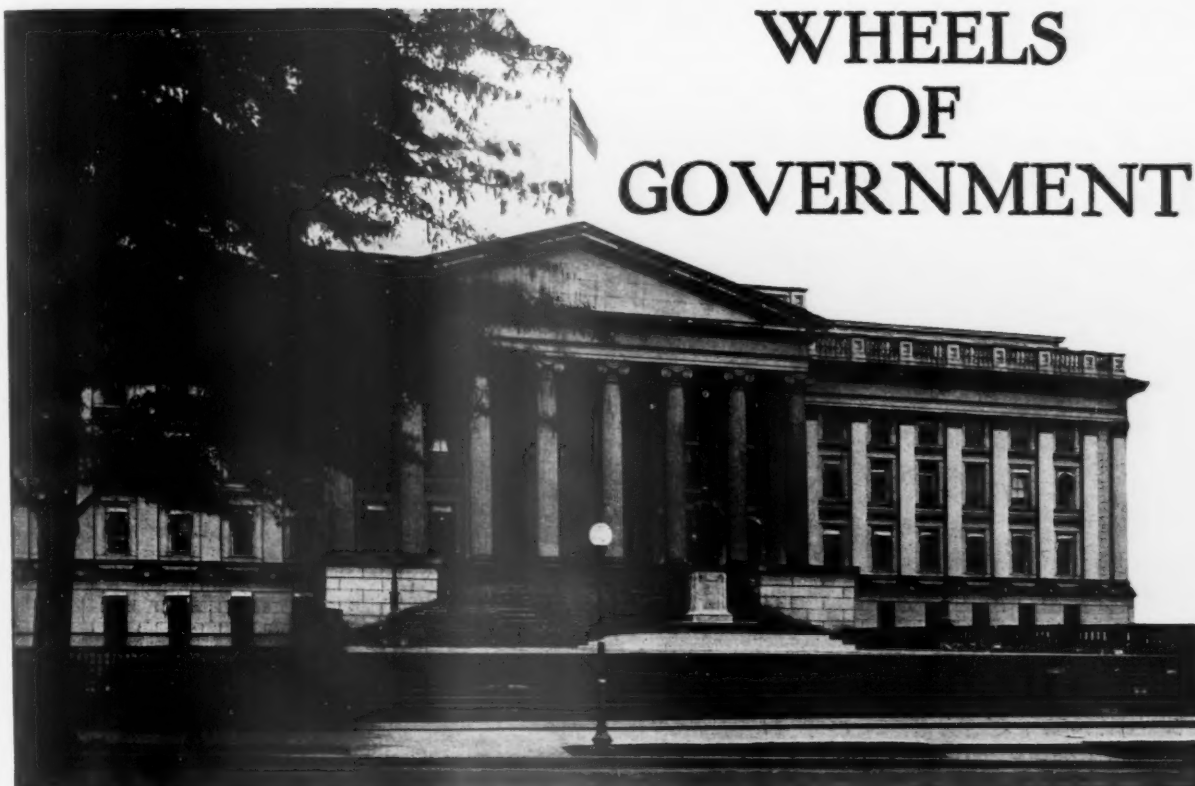
* Secretary, Anthracite Institute.

† Acknowledgment is due to Mr. Norman F. Patton of the Statistical Department of the Anthracite Institute for valuable help in the preparation of this article.



EUGENE McAULIFFE
President, Union Pacific Coal Company
Newly Elected Member, Board of Directors, The American Mining Congress

WHEELS OF GOVERNMENT



The United States Treasury Building at Washington.

FORECASTS as to the date of adjournment of Congress set that much desired time further in the future as important issues are presented by their adherents and prolonged debate continues to delay "must be enacted" measures of the administration.

The Bargaining Tariffs Bill drags on before the Senate as the defenders of American industry state their views day by day. There has been no change in the original form of the bargaining tariffs measure other than that introduced at the close of the hearings before the Committee on Finance of the Senate wherein assurance was given that affected industries would be heard by some governmental agency before the conclusions of treaties affecting their welfare. As the bill stands it still takes from the legislative bodies their constitutional right in the conduct of tariff measures and places it in the hands of those who may be designated by the Chief Executive.

The Revenue Bill of 1934 has been approved by the President with a message asking for a modification of the oil tax so vitally affecting the Philippine Islands. There are other modifying amendments which, if treated in a constructive way, may improve from the administrative angle the wording of this hysterically enacted measure.

The Federal Securities Exchange Act of 1934 is still in conference committee where a sane effort is being made to develop a workable bill under which industrial enterprises may finance for carrying on and under which money may be forthcoming for the development of new enterprises. The burdensome measures of the Securities Act of 1933 are treated

under amendments in Title II of the Federal Securities Exchange Act of 1934 as passed by the Senate and it is believed that the Conference Committee with a serious realization of the harm which has been done will develop the best measure possible.

The press for silver legislation has been heard and the enactment of a bill to be introduced by Senator Pittman is certain. This bill will, however, in the main leave the means to be used in the hands of the administration. The bill will not add to or change materially the powers previously granted by Congress but will assure immediate purchase by the Federal Government and an immediate improvement for those sections of the country which so greatly desire its enactment.

The administration's Oil Control Bill is receiving preferred treatment and will unquestionably be reported by the Mines and Mining Committee of the Senate and passed by both Houses in the very near future. In the hearings before the Mines and Mining Committee the bill has been subject to violent attack by certain production elements in Texas and the Southwest. The allegation has been made that the restrictions of production ordered by Administrator Ickes under the Petroleum Code were made for the purpose of permitting additional imports of foreign oil. Regardless of these attacks the President has sent down a message stating that he is "frankly fearful that if the law is not strengthened, illegal production will continue and grow in volume and result in a collapse of the whole structure. This will mean a return to the wretched conditions which existed in the spring of 1933." It is foreseen by many that the enactment of

this bill placing in the hands of the Federal Government the control of intrastate production means the end of the state taxing power as affecting petroleum and its products. This develops a most interesting source of revenue for the Federal Government in the matter of the gasoline taxes. The picture unfolds of a Federal gasoline tax capable of producing a billion dollars in revenue. Something quite desirable to a Treasury subjected to heavy spending.

The so-called "Social Legislation" is apparently to be made the subject of a joint congressional investigation in preparation for further consideration before the seventy-fourth session of the Congress. This treatment will apparently involve the Wagner-Lewis Unemployment Insurance effort, probably the 30-hour week bills and possibly the Wagner Labor Disputes Act, now renamed the National Labor Act. The National Labor Act is slated for report by the Committee on Education and Labor of the United States Senate although the rewritten form of the bill has not as yet been made public. It is understood that there has been much discussion as to whether the proposed National Labor Board shall be an appellate body or a body of original jurisdiction with regional and district subboards in a multitude of locations throughout the nation. With the restless and bewildering labor situation now existing throughout the land, it is felt by industry that the enactment of this bill will precipitate an unprecedented holocaust of strikes and industrial warfare. The long established principle of the arbitration of differences between labor and management seems to have become entirely lost to view.

METALS CONVENTION and EXPOSITION



W. S. BOYD
National Chairman, Board of Governors
Western Division, The American Mining Congress

ANNOUNCEMENT has been made by Howard I. Young, president, The American Mining Congress, of the dates for the annual meeting of the Western Division (Metals Section) of the organization. W. S. Boyd, vice president, Nevada Consolidated Copper Corporation, is national chairman of the division, and W. Mont Ferry, vice president, Silver King Coalition Mines Company, is chairman of the program committee. The week of September 24, 1934, has been selected as the date, and San Francisco, Calif., as the entertaining city.

Mr. Ferry has submitted a questionnaire to some 4,000 metal producers for suggestions as to the type of program that will best suit the needs of the industry, and has appointed an industry-wide cooperating committee which will sponsor the convention.

Members of the Western Division include the following prominent mining officials:

Philip Wiseman, president, United Eastern Mining Company.
A. P. Ramstedt, vice president, Tamarack & Custer Mining Company.
Wm. B. Daly, assistant manager of mines, Anaconda Copper Mining Company.
B. C. Yates, general manager, Homestake Mining Company.
T. H. O'Brien, general manager, Inspiration Cons. Copper Co.
Wm. Koerner, general manager, Magma Copper Company.
Ernest N. Patty, dean, Alaska School of Mines.
G. Chester Brown, California Metal & Mineral Producers' Association.
R. M. Henderson, chairman, Colorado Metal Mining Fund.
Henry L. Rives, secretary, Nevada Mine Operators' Association.
A. W. Strowger, attorney, Portland, Oreg.
Chas. D. Garfield, secretary, Alaska Chamber of Commerce.
M. D. Harbaugh, secretary, Tri-State Zinc & Lead Ore Producers' Association.
Brent N. Rickard, manager, El Paso Smelting Works, American Smelting & Refining Co.
D. D. Muir, Jr., vice president and general manager, Western Operations, U. S. Smelting Refining and Mining Company.

Frank M. Smith, smelter director, Bunker Hill & Sullivan Mining & Con. Co.

Robt. S. Palmer, secretary, Colorado Chapter, The American Mining Congress.

J. F. McCarthy, manager, Hecla Mining Co.

J. C. Kinnear, general manager, Nevada Consolidated Copper Corporation.

Robt. M. Betts, president, Cornucopia Mines Company.

M. F. Owens, manager, Black Eagle Mining Company.

Howard N. Fields, American Smelting & Refining Company.

A. G. Mackenzie, secretary, Utah Chapter, The American Mining Congress.

Dean Milnor Roberts, University of Washington.

Members of the program committee invited to participate in the development of the convention are as follows:

ARIZONA.—*State chairman*, P. G. Beckett, vice president and general manager, Phelps Dodge Corporation, Douglas; T. H. O'Brien, general manager, Inspiration Construction Copper Co., Inspiration; Robt. E. Tally, vice president, United Verde Copper Co., Clarkdale; Ross D. Leisk, vice president and director, United Verde Extension Mining Co., Jerome; Wm. Koerner, general manager, Magma Copper Co., Superior; F. W. MacLennan, general manager, Miami Copper Co., Miami.

CALIFORNIA.—*State chairman* (to be selected); Frank H. Probert, dean, College of Mining, University of California, Berkeley; Philip Wiseman, president, United Eastern Mining Co., Los Angeles; E. C. Hutchinson, president, Kennedy Mining & Milling Co., San Francisco; A. S. Howe, Central Eureka Mining Co., Sutter Creek; A. V. Udell, Atolia Mining Co., San Francisco; H. W. Gould, H. W. Gould & Co., San Francisco; I. Ballard, secretary, National Quicksilver Producers' Association, San Francisco; Fred W. Nobs, Empire Star Mines Co., Ltd., Grass Valley; W. S. Boyd, vice president, Nevada Consolidated Copper Corporation, San Francisco.

COLORADO.—*State chairman*, Chas. A. Chase, Shenandoah-Dives Mining Co., Silverton; Arthur Roeder, Colorado Fuel & Iron Co., Denver; Robt. M. Henderson, Denver; Jesse F. McDonald, manager, Downtown Mines Co., Leadville; Robt. S. Palmer, secretary, Colorado Chapter, A. M. C., Denver; John G. Clark, Tungsten Production Co., Inc., Boulder.

IDAHO.—*State chairman*, H. G. Washburn, general manager, Federal Mining & Smelting Co., Wallace; Stanly A. Easton, president, Bunker Hill & Sullivan Mining & Concentrating Co., Kellogg; J. F. McCarthy, president, Hecla Mining Co., Wallace; Axel P. Ramstedt, vice president, Tamarack & Custer Construction Mining Co., Wallace.

KANSAS.—*State chairman*, O. M. Bilharz, O. M. Bilharz Mining Co., Miami, Okla.

MISSOURI.—*State chairman*, Andrew Fletcher, vice president and treasurer, St. Joseph Lead Co., New York City; M. F. Owens, manager, Black Eagle

Mining Co., Miami, Okla.; J. A. Caselton, vice president and secretary, St. Louis Smelting & Refining Co., St. Louis.

MONTANA.—*State chairman*, J. R. Hobbins, vice president, Anaconda Copper Mining Co., Butte; Wm. B. Daly, manager of mines, Anaconda Copper Mining Co., Butte; Francis M. Thomson, president, Montana School of Mines, Butte; J. D. Mackenzie, manager, American Smelting & Refining Co., Helena.

NEVADA.—*State chairman*, J. C. Kinnear, general manager, Nevada Construction Copper Corporation, McGill.

NEW MEXICO.—*State chairman*, R. B. Tempest, general manager, Chino Mines, Hurley; Dr. E. H. Wells, president, New Mexico School of Mines, Socorro; Ira L. Wright, general manager, Black Hawk Consolidated Mines Co., Silver City; J. T. Matson, general manager, American Metal Co. of New Mexico, Tererro; C. A. Pierce, general superintendent, United States Potash Co., Carlsbad.

OKLAHOMA.—*State chairman*, John A. Robinson, general manager, Commerce Mining & Royalty Co., Miami; George Fowler, consulting engineer, Miami.

OREGON.—*State chairman*, Robt. M. Betts, president and manager, Cornucopia Mines Co., Blackbutte; A. W. Strowger, attorney, Portland.



W. MONT FERRY
National Chairman, Program Committee
Western Division Meeting

SOUTH DAKOTA.—(State chairman and members to be selected.)

TEXAS.—*State chairman*, Brent Rickard, manager, El Paso Smelting Works, American Smelting & Refining Co., El Paso; J. S. Cullinan, Petroleum Bldg., Houston; H. P. Henderson, president, Texas Mining & Smelting Co., Laredo; H. M. Albright, vice president and general manager, United States Potash Co., New York City.

UTAH.—*State chairman*, Oscar Friendly, Salt Lake City; E. A. Hamilton, general manager, U. S. Smelting, Refining & Mining Co., Salt Lake City; D. A. Lyon, director, Utah Engineering Experiment Station, University of Utah, Salt Lake City; J. O. Elton, manager, International Smelting Co., Salt Lake City; W. J. O'Connor, manager, Utah Department, American Smelting & Refining Co., Salt Lake City; J. W. Wade, vice president and general manager, Tintic Standard Mining Co., Salt Lake City.

WASHINGTON.—*State chairman*, Frank M. Smith, smelter director, Bunker Hill & Sullivan Mining & Concentrating Co., Spokane; Dean Milnor Roberts, University of Washington, Seattle.

A meeting of all of these groups will be arranged for some central point, possibly Denver, Colo., about the 15th of

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Coal Production

In Ohio, 1933

By H. E. NOLD*

DURING 1932 Ohio coal mines produced 13,924,400 tons. During 1933 they produced 19,690,000 (figures subject to correction), a gain of 5,766,000 tons, or 41.4 percent. This compared to a gain of 5.8 percent in bituminous coal production in the total United States over the same period. This shows that Ohio has taken a long step toward regaining her position as an important coal producing state.

Increased wage scales and more regular employment have brightened the outlook and filled the stomachs of thousands of miners and their families. Mines which had been idle or practically so for a year or more were put on full production during the last five months of 1933.

OHIO DIVISION OF MINES

The mine inspectors of Ohio, in spite of decrease in their number and increased mine activity, have, during 1933, renewed their efforts to inspect and bring under their jurisdiction all truck mines in the state. James Berry, chief, Division of Mines, should be commended for their strenuous efforts to insure the safety of the 6,000 coal miners employed in the 1,600 small Ohio mines. This is in addition to their regular duties in the larger mines.

TRUCK MINES

Better highways, unemployed miners, idle trucks and general competitive conditions have combined, during the depression, to develop conditions which have resulted in a rapid increase of production from mines, without railroad connections, from which the coal is trucked to market. This industry expanded rapidly during 1933 and the early months of 1934. It has now reached such proportions as to be an important factor in coal production and sale in Ohio.

The writer has not been able to obtain accurate figures of production from truck-mines. James Berry says that according to the records in his office, at least 5,740 men were employed during 1933 producing coal in truck-mines. Allowing 100 days operation during 1933

and a production of four tons per man per day, he estimates the production from truck-mines during 1933 as at least 2,296,000 tons.

D. F. Hurd, secretary of the Eastern Ohio Coal Operators' Association, in a letter of April 5, 1934, gives information which shows that there are now over 1,500 truck-mines in Ohio. He says: "As to the tonnage, several calculations have been made, some running as high as 4,000,000 tons produced by the truck-mines in 1933. My guess would be closer to 3,000,000."

During the summer of 1933, the Ohio Coal Distributors' Association, representing truck-mine operators of Ohio, was formed. This is the largest of several such associations in the state. In a letter dated April 3, 1934, Walter Leckrone, New Lexington, Ohio, secretary-treasurer of the above association, says: "The Subdivisional Coal Code Authority for Ohio (bituminous code) lists approximately 1,600 trucking or domestic mines. Some of these mines have rail facilities, and ship some coal by rail, a few have river outlets on which they ship some coal by barge. My own list contains only 1,300 mines in this classification. Of these, nearly all depend entirely upon highways and trucks for the transportation of their entire output. The number of mines still is increasing very rapidly. In Columbiana County alone 10 new mines were opened within a 15-day period this spring."

"We have production figures, of course, only from those mines which are members of our association, or which are members of affiliated local associations. The most recent reports, filed within the past ten days, show a total production for 1933 of 3,702,000 tons. This figure does not include approximately 200,000 tons from Perry County mines, which have not yet reported, nor the production of associations in the Wellston-Jackson district, nor in the Pomeroy district, which we estimate will run to another 200,000 tons. It covers not more

than half the mines classified as trucking mines, but it does include virtually all the larger operations. We estimate—and it is pure guessing—that an additional 1,000,000 tons may have been produced by six or seven hundred small mines not members of any of these affiliated associations."

Making allowance for some coal shipped by barges, which is included in Mr. Leckrone's estimate and which according to the Ohio Division of Labor Statistics amounted to a total of 365,000 tons in 1933, it seems probable that the coal produced in truck-mines in Ohio for last year was at least 4,000,000 tons. It seems likely, therefore, that about 20 percent of the coal produced in Ohio was from truck-mines.

TRUCK-MINES MARKET

Most of this coal is sold for domestic heating or to apartment houses and hotels; some is sold to manufacturing plants. Much of it is retailed direct to the ultimate consumer, thus eliminating the cost of rehandling in coal yards. Most of this coal is sold within 50 to 75 miles of the point of production. Some is hauled greater distances to cities in western and northwestern Ohio. Trucks bringing potatoes from Michigan or straw for paper mills from northern Indiana to central Ohio frequently take back a load of coal. In this way a considerable tonnage from truck-mines finds its way to the Detroit area and into northern Indiana. The area to which this coal is regularly hauled includes among others such cities as Cleveland, Canton, Akron, Youngstown, Massillon, Mansfield, Wooster, Newark, Columbus and Portsmouth.

The sale of such a large tonnage from truck-mines in this area has been ruinous to much of the established trade in cities and towns. Under depression conditions, unemployed miners banded together and opened truck-mines. Their investment was little beyond their labor. They or other unemployed men bought cheap second-hand trucks and the production and transportation organization was complete. In many instances the coal was trucked to the city and sold for whatever it would bring at the time; if the market was filled this was frequently not much. The money received was

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* Professor of Mine Engineering, The Ohio State University.



E. J. NEWBAKER
Vice President in Charge of Operations
The Berwind-White Coal Mining Company
National Chairman, Coal Division, The American Mining Congress
1934-35

Classification and Tabling of Alabama Red Iron Ores*

A. C. RICHARDSON†

B. S. FOLLOWILL†

IN 1927 W. H. Coghill showed that there is considerable liberation of the iron oxide mineral from gangue when the Alabama red iron ores are ground to a size suitable for classification and tabling but that there is not sufficient to make possible a high extraction and a high grade of concentrate. Coghill states:

"High extraction and high grade of concentrate cannot be obtained without grinding to a size comparable with flotation or cyanide practice. If grade of concentrate be sacrificed, the grinding need not be so severe.

"These ores slime readily during grinding, and in most instances the slimes are only slightly higher grade than the original ore. Not only do they carry a considerable percentage of the total iron in the ore, so that to reject them as tailings would result in prohibitively low extraction, but they are too fine to be amenable to ordinary methods of gravity concentration."

In 1929 the Bureau of Mines published results showing that certain Alabama oolitic iron ores could be concentrated by classification and tabling after grinding with rubber-covered rods. This selective grinding produced slimes of much higher grade than the original ore and they were considered part of the final concentrate.

In this study the granular part of the ore easily gave a fair-grade concentrate with good recovery by standard methods. This suggested that gravity concentration of the red iron ores after grinding in standard rod-mill equipment might be practical. Therefore, such tests have now been made on five leached and unleached high-silica ores, one high-lime ore, and one self-fluxing ore.

PROCEDURE

The ore was crushed dry to 4-mesh and then ground to 14-mesh in a laboratory rod mill, using regular steel rods. The minus 100-mesh material was screened out, dewatered, and set aside temporarily. The minus 14 plus 100 mesh fraction was classified into four products that were tabled on laboratory equipment. The resulting concentrate and tailing were finished products. The

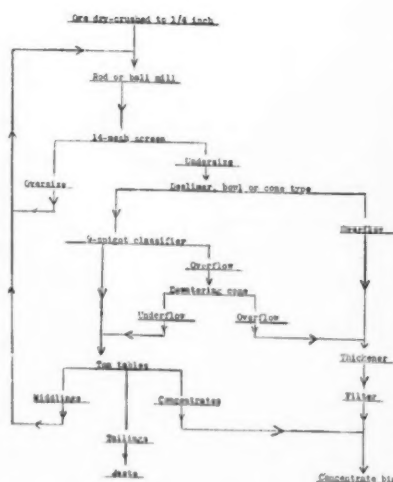


Figure 1. - Proposed flow sheet for concentration of red iron ore

middlings from the four table runs were combined and reground in the rod mill to minus 35-mesh and the minus 100-mesh material removed by screening. The resulting minus 35 plus 100 mesh fraction was classified into four products and tabled to give only finished concentrate and tailing. The two minus 100-mesh portions then were tabled separately to give finished concentrate and tailing.

The method of tabling the minus 100-mesh product differed somewhat from the ordinary in that concentrates were removed from two different zones. A granular concentrate was removed, as usual, from the concentrate end of the table while a slime concentrate was carried across the table by the wash water and discharged between the head motion end and the tailing zone.

EXPERIMENTAL RESULTS

There is a uniform tendency for the grade of concentrates and the percentage extraction to increase with the grade of the ore. If an ore contains 35 percent

or more of iron, a satisfactory concentrate can be expected, with a reasonably good extraction. In general, the metallurgical results are of about the same order as those obtained with selective grinding and compare favorably with the results obtained by roasting and magnetic concentration.

The removal and separate treatment of the minus 100-mesh material in the foregoing manner would not be practical commercially. On the other hand, outright removal of the slimes in the usual way by means of a classifier and their addition to the concentrates would not yield metallurgical results equivalent to those obtained in this investigation because the slimes would be very little better, if any, in grade than the original ore, and they would constitute a very large percentage by weight of the original ore. Further experimentation showed that acceptable results could be obtained by gently desliming the minus 100-mesh products to remove about 25 percent as a slime overflow and then tabling the remainder. The overflow corresponded approximately to the slime concentrates removed near the head-motion end of the table in the tests. All concentrates and tailings in the tabling of the underflow were discharged from the regular zones. The over-all results obtained in this way are virtually equivalent to those reported for the minus 100-mesh products.

COMMERCIAL APPLICATION

Although these tests were made with small laboratory machines it is believed that the results could be duplicated commercially. In large-scale operation hydraulic classification would take the place of screening. Probably a nine-spigot classifier would be used, with the overflow going to a dewatering cone. Each spigot product would go to a separate table, as would the underflow from the dewatering cone. The separate tabling of 10 products, instead of 4, as was done in the laboratory tests, should give increased table capacity.

Desliming should remove approximately 10 to 12 percent of the total ore during grinding. These slimes would be settled and added directly to the table concentrates. Some form of thickener would have to be used for this purpose, and a small quantity of lime or other

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* Reprinted from U. S. Bureau of Mines Report of Investigations 3224.

† U. S. Bureau of Mines.

Flotation of Metallic Gold-

Relation of Particle Size to Floatability*

By E. S. LEAVER† and J. A. WOOLF‡

THIS paper is one of a series being prepared by the authors on the flotation of gold but differs from the previous ones in that all the experimental work has been done on synthetic samples composed of definite, known constituents. By this method, data were obtained on the flotation of various sizes of metallic gold particles which, by proper interpretation, should have practical application to the recovery of metallic gold by flotation from natural ores.

It is known that bright metallic gold floats readily, under certain conditions; but since, in past practice, all-flotation seldom has been used as the recovery method for straight metallic gold ores, no detailed study had been made to determine the actual relation of particle size to floatability. In general, coarse gold is floated more readily from a thick pulp (40-60 percent solids) than from a pulp of the usual density (20-30 percent solids) used for flotation feed. In the treatment of gold ores, containing metallic gold as well as gold-bearing sulphides, where flotation is the principal recovery method, it is good practice to make provision to recover the coarse metallic gold by some auxiliary method. Tables, blankets, or amalgamation has been used for this. Recently the so-called "unit-cell" installation is being used to recover this coarse gold before it enters the regular flotation circuit. The unit-cell installation is the placing of one flotation cell in the circuit between the ball-mill discharge and the classifier. The pulp density at this point is usually about 65 percent solids, but since there is much very coarse sand the pulp is quite different from an ordinary flotation feed containing the same percentage of solids. In one installation of this kind, in Canada, some metallic gold coarser than 28-mesh is being floated; but no attempt is made to maintain any definite recovery, the object of the flotation cell at this point being to remove as much coarse gold as possible from the regular circuit.

The purpose of the research in the present paper is to show the actual percentages of the different sizes of metallic gold particles recoverable by flotation under given conditions. The data are presented by means of detailed tabulations.

METHOD OF CONDUCTING EXPERIMENTS

The particular sample used for each test was prepared by mixing a definite quantity of natural metallic gold with clean sea sand, previously ground to 60-mesh, and in one instance by adding a definite amount of barren pyrite to the gold-sand mixture. The gold used in all tests was obtained from the Idaho Maryland mine, from ore crushed with stamps. It is recognized that the floatability of metallic gold depends somewhat on the shape of the gold particles, and that for this reason alone the gold from one mine may float quite differently from that from another mine. By using natural metallic gold from a lode mine, the results have a more practical application than if gold beads or placer gold were used.

The gold was cleaned from the table concentrate by careful pannings to remove nonmetallic gangue and then by prolonged treatment with dilute nitric acid to dissolve the sulphides. In this way a product was obtained consisting of pure metal which was, as is the case with practically all natural gold, an alloy of metallic gold and silver. The metallic gold used in these tests averages 850 to 900 fine, the remaining 10 to 15 percent being metallic silver.

The clean metallic gold thus obtained was mixed with ground sea sand or ground sea sand plus pyrite to form the flotation feed. In each instance the gold was sized and weighed before it was added to the flotation feed. After flotation the metallic gold in the flotation concentrate and that remaining in the flotation tailing were carefully removed from the gangue and cleaned as de-

scribed above. The gold recovered from the two flotation products was then sized separately and weighed, permitting exact flotation recovery of each size of gold to be computed. The gold from both flotation concentrate and flotation tailing was then combined and used for the next test.

It was found, when sizing tests of the gold before and after a flotation test were compared, that usually a small percentage of the coarser sizes had been broken down by the agitation in the flotation machine and would then show up in the finer sizes after flotation. For this reason, the combined sizing tests of the gold after flotation, rather than the sizing test of gold added to the flotation feed, was considered the true size of the gold subjected to flotation.

SUMMARY AND CONCLUSIONS

The results of this research warrant the following conclusions:

1. Clean metallic gold, minus 60-mesh in size, can be floated successfully from a siliceous gangue or a siliceous gangue containing pyrite with the usual flotation reagents used for sulphide ores.
2. Gold does not float as readily or as rapidly as most of the mineral sulphides; therefore, if the percentage of gold in the flotation feed is high, a longer period of flotation is required. With the usual milling-grade ore, the time factor is not so important.
3. The Sub-A-type flotation machine is more effective in floating coarse gold than the straight mechanical type machine.
4. Reagent No. 208 is the most effective promoter tried in this work. The use of this reagent in a Sub-A machine gave a recovery of 96.2 percent of all minus 40-mesh gold and 99 percent of all minus 60-mesh gold.
5. Copper sulphate does not increase the recovery but does aid by increasing the rate of flotation of gold particles under 60-mesh in size.
6. Almost complete recovery of clean metallic gold can be made by flotation, provided the ore is all ground to pass 60-mesh and no interfering slime is present in the flotation feed.
7. Gold coarser than 40-mesh is not recovered in the usual flotation concentrate.

* U. S. Bureau of Mines Report of Investigation 3226.

† Supervising engineer, Rare and Precious Metals Experiment Station, U. S. Bureau of Mines, Reno, Nev.

‡ Assistant metallurgist, U. S. Bureau of Mines.



Steel I Beams Supported on Brick Pilasters, Protected by Brick Curtain Walls, Clyde No. 1 Mine, W. J. Rainey, Inc.

METHODS OF PERMANENT ROOF SUPPORT

By REAMY JOYCE *

THE research committee on permanent roof support has an interesting and important assignment. While its work is not as spectacular as research in problems of ventilation and the prevention of explosions, it nevertheless ranks high in safety work and in the difficult job of developing a profit as the result of mining operations. The necessity of maintaining adequate roof support in main headings is fundamental. That method of construction is ideal which results in safe, uninterrupted operation at low cost. The first cost of construction and the annual cost which must be absorbed during the life of the mine are matters of judgment based on experience, knowledge, and research.

Of the construction materials ordinarily used for roof support — wood, masonry, concrete, steel, and combinations of these materials, each has certain advantages, as well as certain limitations. All of these materials have known working stresses and proper designs can be made for any load with certainty. The nature of the roof to be supported, the quantity of coal to be mined, the probable life of the headings, must be carefully studied when the plan of operation is laid out. Serious consideration of the types of roof support to be used to meet the widely varying conditions, not only in different coal measures, but in the different parts of the

sound and free from decay, possess great strength for their weight. Unfortunately, naturally durable wood is scarce. The two woods which grow in the United States that have both great structural strength and natural durability are Bois d'Arc and black locust. To the extent that these woods may still be procured at a reasonable cost, they make ideal mine timbers.

The average woods run oak timber that is now available for mine use is not resistant to decay in the natural state; the original strength is soon lost and the presence of rotten timber in the mine constitutes a fire hazard. The other hardwoods possess even less natural durability than the oaks, and the same is generally true of the pines and various other conifers. Most of these woods, however, possess adequate strength when sound, and failure from decay may be eliminated by chemical impregnation under pressure-vacuum processes. Certain chemicals, like zinc chloride, which prevent decay, also have valuable fire retardant qualities. Chemical impregnation, using modern methods, does not change the physical properties or strength of the kind of wood treated. A very slight increase in size in the less strong woods compensates for lower working strength. For example, a round stick of timber increases in bending strength as the cube of its diameter and in stiffness as the fourth power of its diameter.

Wood is resilient and has far greater ability to absorb impact than any other



Main Bottom—Concrete Arch Nemacolin Mine, The Buckeye Coal Co.

same mine, is vital and necessary. No one type of construction can be expected to produce the lowest annual cost combined with adequate safety for all operating conditions. It is therefore necessary to study the properties and characteristics of different construction materials and to forecast the results of their use under definite conditions of service.

WOOD

Wood timbers have the advantage of low first cost. Wood timbers, when

* Chairman, Subcommittee on Roof Support, Coal Division, American Mining Congress.

material. It bends before it breaks, and the sound which may be heard and the deformation which is seen as wood takes a load are useful in gauging earth pressures. When broken through wrecks or squeezes, wood timbers are easily removed, which is not so true of masonry, concrete, and steel, which often have to be shot or cut out.

It is therefore important to think of wood as being in three distinct classes:

Untreated timber: 1. Naturally durable; strong; scarce. 2. Not naturally durable; strong when sound; plentiful.

Chemically treated timber: 1. Durable; strong; plentiful.

Wood timbers have a further advantage in that they may be "recovered" and reused if sound. This is particularly true of treated timber and to a lesser extent of steel timbers. Masonry and concrete are so fixed in place they cannot be moved.

MASONRY

Brick walls, arches and pilasters are durable, incombustible, and most satisfactory when properly built to meet the right conditions of service. The first cost is high and skilled labor is required for this type of construction. Maintenance cost is practically nil if not disturbed by wrecks or earth movements.

CONCRETE

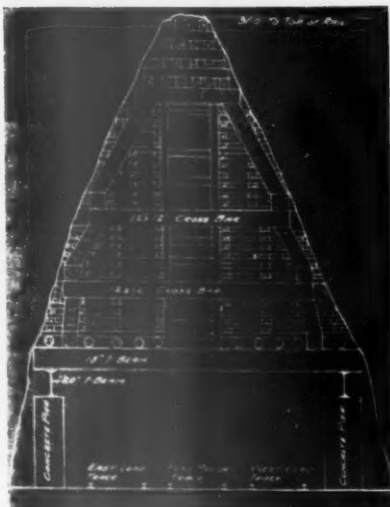
While concrete does not require the same skilled labor that masonry does, its use entails much more careful supervision and engineering skill.

There are certain roof conditions that may be made stable by the application of from one-half inch to one inch of gunite when the roof is first exposed and before any appreciable amount of air slacking has started. Concrete may thus be used in various headings where a thin coat will be effective up to the heaviest types of reinforced concrete construction. Main slopes, main drifts, main bottoms, and other "bottle necks" are often sufficiently important to justify the heaviest type of construction because of the difficulty of maintaining unstable roof conditions. First cost of the type of construction selected must be balanced with the safe maintenance and dependable operation of these strategic headings.

Bad concrete disintegrates and the water in some mines seems to have this



Switch on First Rigid Heading, Consolidation Coal Co., Mine No. 3



Details of Timbering at Zeigler No. 1 Mine, The Zoller Coal & Mining Co.



Guard Rails in Commodore No. 2 Slope, Clearfield Bituminous Coal Corp., Prevent Damage to Slope Timbers.

effect even on good concrete. The importance of intelligent supervision of concrete work cannot be overestimated.

STEEL

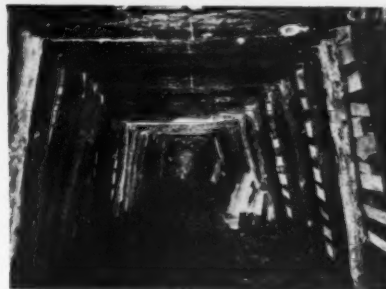
Steel I beams, H beams and steel rails are successfully used as headers or crossbars for permanent roof support rather widely by coal mines. They are valuable in securing maximum head room. While the first cost of steel timber is greater than wood, the labor cost of installation is generally less. In some places, corrosion of steel timbers is a real problem, and painting is often difficult if not impossible. Steel must be cut to length before being taken into the mine. Any necessity for further sizing must therefore be taken care of by the shape of the heading where it is installed. To a lesser extent, steel legs are used to make three-piece timber sets, but usually wood, either untreated or treated, brick, concrete, or the coal itself is used to support the steel headers.

AIMS OF THE COMMITTEE

It is the duty of management to return satisfactory earnings on invested capital. Undermaintenance is expensive and often unsafe. Overmaintenance or methods requiring unnecessary capital investments are also expensive and may make the profitable operation of the mine impossible.

The challenge of operation to management requires alert thinking. Conditions are changing. Labor costs are up. Methods and materials must be studied as never before. Coal mining now has a real opportunity to demonstrate its ability and stamina.

The committee on permanent roof support hopes to present to The American



Main Heading, Consolidation Coal Co., Mine No. 3.

can Mining Congress many good methods of roof support, together with the first cost of construction, the maintenance costs, the service conditions, the service life, and finally, the annual costs developed by the various materials and methods.

Metals Convention and Exposition

(Continued from page 17)

July, for the final selection of topics and speakers. The problems before the metal producers are many and serious, and this convention is presented by The American Mining Congress in an earnest effort to develop the best thought of all branches of the industry as to the problems to be met and the needs of the industry, and for the adoption of a program of action upon which all can unite.

In conjunction with the convention will be staged an exposition of metal mining equipment. This is the first exposition to be held by The American Mining Congress for the metal miners since 1924, and it is anticipated that the leaders in the manufacturing industry will cooperate with the operating men in their efforts to bring metal mining back to its old-time prosperity and efficiency.

As plans for the meeting develop, announcement will be made through these pages. The American Mining Congress and its officials urge the widest possible cooperation of mining men in the development of this convention and exposition.

Cooperation Between Capital and Labor in Italy

(Continued from page 12)

are the metallurgical industries, chemical industries, refining and grinding sulphur, the glass industries and cement industries.

All new plants for the production and distribution of electric power as well as the enlargement of existing plants are also subject to this new regulation.

To obtain the required license, applications must be presented to the corporate inspector's office concerned and shall be accompanied by a detailed report containing data in answer to a questionnaire included in the decree.

A commission is formed to give an opinion on the applications and the Minister of Corporations, after having consulted the commission, acts by decree on the applications presented.

PRICE CONTROL

In Italy the law of supply and demand still controls the price of commodities and only in a few instances, where it was in the interest of the nation to do so, have commodity prices been fixed.

The control of commodity prices, however, was started in most of the larger cities through a municipal office that gathered statistics, investigated prices and published a price index schedule. Through the confederations representing the workers, demands for adjustment of commodity prices, as well as wages, can be made to the National Council of Corporations and the industrial operators, through their confederations, can demand commodity price adjustments where these seriously affect their industry as well as reductions in workmen's wages. There are also co-operative organizations for collective buying, established by the consumer, which help to regulate commodity prices.

In Italy they have no consumers' board corresponding to that of the NRA, as the consumer is indirectly represented and protected through these municipal agencies and the confederations.

MUSSOLINI'S VIEWPOINTS ON CAPITAL AND LABOR

In a speech delivered in March, 1926, when the Law on Syndicates was put into effect he stated:

"Of all the laws that have been submitted for your examination during these first 40 months of government, this one is the most courageous, the most audacious, the most radical; therefore the most revolutionary.

"The concept of socialism, that impersonated capitalism in-designated individuals and gave one to understand that these individuals rejoiced in plucking the poor proletariat was false. All such statements are ridiculous. Modern capitalists are the captains of industry, very great organizers, men that have, and must have, a very high sense of both civil and economic responsibility. The success of their industry is the success of the nation. For what can these men ask? Individual pleasures? But there is a law and it is this: It is possible to accumulate riches ad infinitum, but man's capacity to enjoy them is limited. One of the most absurd things of the socialist literature was that of making believe that men's happiness depends exclusively on the more or less complete satisfaction of their material needs.

"Collaboration of the classes is another fundamental point of Fascist syndicalism. Capital and labor are not two terms in antagonism; they are two terms which complete one another; the one can not do without the other, and therefore they must understand each other, and it is possible for them to understand each other. I say this, because I have the experience of three years of governing."

On May 7, 1928, Mussolini spoke to the National Congress of Fascist Syndicates:

"The present century will see a new economy. As the past century saw capitalistic economy, the present will see corporative economy. It is necessary to put capital and labor on the same level; one must give equal rights and equal duties to the one and to the other.

"The production of wealth thus passes from individual ends to national ends. From this new political-moral position spring new duties, some real needs. Collaboration is imposed by things, even more than by laws or institutions, or will, that is, by the present phase of economy.

"The laborers are collaborators, producers, whose level of life must be raised materially and morally, in relation to the times and to the possibilities. I affirm that, in time of crisis, it is in the interest of the laborers to accept a curtailment of wages; but, when the crisis is over, it is in the interest of the industrialists to reaugment the wages, restoring equilibrium to the situation. The Ford policy of high wages is not possible in Italy for obvious reasons, but neither is the policy of low wages advisable, which lessens the consumption of vast masses and ends by harming the industry itself."

The following abstract from a speech of Mussolini to the National Council of Corporations, on November 14, 1933, is also of significance:

"Today the crisis has penetrated so profoundly into our economic system that it has become a crisis of this system.

"But first of all, what is capitalism? It is a method of industrial production. Arrived at its most perfect expression, capitalism is a method of mass production for mass consumption, financed by the mass through the emission of national and international joint stock holdings of capital. Hence capitalism is industrial.

"The present era of cartels, of syndicates, of consortia, of trusts, is putting an end to free competition. Margins having become narrower, capitalistic enterprise finds that it is better to make agreements, to ally itself, to merge, in order to divide up the markets and to repartition the profits. The same law of supply and demand is no longer a dogma, because through the cartels and trusts, one can control the supply to meet the demand"

CONCLUDING REMARKS

In reviewing this evolutionary program that is being carried out and in reading the speeches of Mussolini, one sees what a power he has over the people and how his ideals have been accepted without any serious opposition. Dictatorship, yes, but as such it has been a shortcut to the realization of national interests, and the vices of the old Italian regime have thus been elimi-

nated. The Italians for centuries have expected their rulers to tell them what they should do; they are inclined to follow a leader and it has not been difficult for them to accept this new type of government.

In Italy, both capital and labor are now interlocked with the state as arbitrator. In accomplishing this reorganization, Mussolini was fortunate in having the support of his people. He launched new ideas, frankly admitted that they were experimental, and gave the people time to consider them before promulgating an order. The lessons of Italy's experiments, as well as those in other nations, are being carefully studied in formulating the changes that are now being made in our economic and social life which is entirely different from that in other countries. However, we must not forget that the average American has a greater amount of common sense as well as a greater sense of humor than the masses in other countries, and these characteristics will carry our people through any depression without recourse to dictatorship, Communism, or Fascism.

Mr. Wright recently made a short trip to Italy and obtained copies of the recent decrees relating to the obligatory consortia and particularly those that refer to the mineral industries. He also enquired briefly into the price control of commodities and control of new plant construction. We are glad to have this article, as it gives an unbiased presentation of Italy's evolution under Fascism.—THE EDITOR.

Alabama Red Iron Ores

(Continued from page 20)

flocculating agent might have to be employed to facilitate the operation. Sintering or agglomerating the final combined concentrates would be necessary to produce a blast-furnace feed of the proper physical characteristics.

On the basis of the data obtained in the laboratory tests the flow sheet shown in figure 1 is proposed. This single-unit flow sheet is designed to handle approximately 10 tons of ore per hour. The average amount of middlings to be retreated would be about 26 percent of the original ore. With a feed of 10 tons of new ore per hour, about 2.6 tons would be returned as middlings, making the total feed to the rod mill about 12.6 tons per hour. If 10 percent of the ore is removed as slimes approximately 11.6 tons per hour remain to be classified and tabled. In these calculations it is assumed that the middlings would be sufficiently broken down in one return pass through the rod mill. If this assumption is erroneous it probably would be necessary to employ a separate grinding unit for the middlings to obtain the degree of grinding required without building up too large a circulating load in the rod mill handling the original ore.

SUMMARY

A simple flow sheet using only standard methods of gravity concentration is proposed for the low-grade Alabama red iron ores. It consists in crushing and grinding to 14 mesh, desliming, classifying, and tabling. The product from each classifier spigot and the underflow from the cone dewatering the classifier overflow are tabled separately. Middlings are returned to the grinding circuit. Table concentrates plus the overflow from the deslimer and the dewatering cone are combined as a final concentrate.

IN discussing this subject it would appear to be of interest to review briefly the history of coal mining, and particularly the attention given to safety.

The earliest records of coal mining seem to be of English and Scottish mines, as in 850 A. D. coal was being used in England for domestic purposes and this must have been about the time it first came into use.

There seems, however, to have been little use made of coal up until 1200 A. D., when coal was mined in the north of England and carried by sea to London, whence the name, "Sea Coals."

In 1325 records show that coal was being carried from New Castle-on-Tyne to France, and from this time there is much mention of the traffic in coal, but little information concerning the mining operations.

Coal was evidently quarried, rather than mined in these early years, as the first mention of pumps used in the English mines at New Castle dates 1649. It appears that coal was used very little for manufacturing purposes up to 1680, as records show that statements were made that the use of coal was very limited in the industries.

In 1557 there was published a book on mining by Georgius Agricola, entitled "De Re Metallica" written in Latin, which has been translated by ex-President Hoover and Mrs. Hoover.

Georgius Agricola was a scientist and wrote many books on scientific subjects, this being the last of his works published, and he states it took him twenty years to complete. While he does not dwell on coal mining, nevertheless, coal was being used in Europe during his time, as noted above. The book is of interest from a safety standpoint, in that it sets forth the various hazards of mining and since it was a standard book on mining for almost two centuries, no doubt it gave much food for thought for improved safety methods in mining.

The specifications, or qualifications, for a mine manager are of interest in connection with our subject, which are as follows:

I. "Philosophy."

II. "Medicine—that he may be able to look after his diggers and other workmen, that they do not meet with those diseases to which they are more liable than workmen in other occupations, or if they do not meet with them, that he himself may be able to heal them, or may see that the doctors do so."

III. Astronomy.

IV. Surveying.

V. Arithmetical Science.

VI. Architecture.

VII. Drawing.

VIII. Law.

I have recited his explanation of the need of the II, or Medicine, as one can see it is perhaps the beginning of first aid in mining.

He also states there are demons of ferocious aspect and demons of this kind are expelled and put to flight by prayer and fasting. There is also noxious air, which the owners sometimes cannot overcome, either by skill or expenditure, and then there is the poison produced in particular places.

These are some of the things mentioned as hazards in mining of the period covered by his book and have been greatly overcome by safety methods, through scientific research, by those scientists who have followed Agricola.

During the latter part of the 17th Century records indicate that "damps" and the atmosphere of mines were under discussion. Nothing of consequence as to making working conditions in mines was accomplished.

Although during the 18th Century the explosive nature of firedamp came to be fully recognized, nothing was done other than by improved ventilation. Workings became deeper and more extensive; accidents became more common.

There was an attempt to improve lighting conditions in mines between 1730 and 1750 by the invention of the flint and steel mill, which was an instrument for striking light with flint and steel. However, explosions resulted from the use of this and it was not of practical use.

At the turn of the 19th Century, on May 25, 1812, an explosion of firedamp occurred at the Felling Colliery, County Durham, England, in which 92 lives were lost.

This disaster focused attention upon the necessity of making coal mines safer, with the result that on October 1, 1813, "The Society in Sunderland for Preventing Accidents in Coal Mines" was instituted.

Among its members was Dr. William Reid Clanny, whose name today is very familiar to mining men, as he was among the first to develop a safety

lamp. He invented a number of lamps, of which the "Clanny" lamp is well known.

A contemporary of Dr. Clanny was one George Stephenson, who also invented a safety lamp about the same time, known as the "Geordy" lamp. It seems the above-named society was not satisfied with the progress made in securing a workable lamp or in the prevention of explosions, so they called in on August, 1815, Sir Humphrey Davy, and he met several members of the society, and after making certain investigations and inquiries, stated, upon learning them, "I think I can do something for you."

The result of his investigations was that by January 1, 1816, he was ready to try out his lamp, which is known as the "Davy" lamp.

While the other two scientists had done much toward solving the lamp problem, it remained for Sir Humphrey Davy to perfect it by the use of the wire gauze. While there seems to be some dispute as to which one of the three scientists belong the honor, the preponderance of opinion at that time and since appears to be in favor of Davy.

This invention of Sir Humphrey Davy would seem to have contributed more than any other to the safety of mining. It was in the same year, 1815, that "splitting of the air" was first introduced, another safety measure, as it produced a ventilating current less contaminated.

A review of SAFETY

in

COAL MINING

By R. H. MORRIS*

* General Manager, The Gauley Mountain Coal Company.



Treatment Plants, Homestake Mining Company.

New Ross Shaft at Homestake

IN MARCH of this year the new hoist for the shaft of the Homestake Mining Company in South Dakota was put in operation. Mr. B. C. Yates, general manager of the company, was at the controls and the staff officials, including the department heads, were present at the ceremony of putting new drums into motion.

This work, the largest ever undertaken by the Homestake Mining Company, was authorized in November, 1932, and the work has been under construction continuously since that time. The completion of this hoist is a part of a large program which has been inaugurated by this company. Ore eventually will be raised from the 5,000-foot level. At present all the levels above 3,200 feet have been driven to connect to the main shaft and it is planned that the cages will be ready to operate to the 2,750-foot level by the first of July, 1935.

The fireproof hoist house is 80 by 210 feet and 65 feet high, and will contain two identical hoists and one large air compressor. The hoisting equipment is designed to be capable of hoisting from the 5,000-foot level, necessitating a shaft depth of 5,120 feet below the collar. The capacity will be 3,000 tons from the 4,000-foot hoisting depth in 15 hours, with a greater capacity from the higher levels and lower capacity from the deeper.

The hoisting engines, the largest ever built, were developed at the Nordberg plant in Milwaukee to meet specifications provided by the Homestake mechanical and electrical departments. Cover-

ing a floor area of 56 by 61 feet, the hoists weigh 1,100,000 pounds.

The new hoisting drums are of bi-cylindro-conical type, the smaller end of each drum being 12 feet in diameter and the larger end 25 feet in diameter. Each drum weighs 210,000 pounds. The drums are mounted in parallel shafts 30 inches in diameter and 38 feet long weighing 77,000 pounds. The capacity of each drum is 5,400 feet of 1½-inch

cable. The cable is wound on the drum in a continuous spiral groove in one layer.

Two 1,500-horsepower motors provide the power for the ore hoist. The cage hoist will be identical except that it is driven by one 1,500-horsepower motor. The maximum hoisting load for the ore hoist is 12,500 pounds for the skips, 14,000 pounds for ore, and 30,400 pounds for rope, or a total of 56,900 pounds.



Ross Shaft Head Frame and Hoist House.

COAL'S CONVENTION and EXPOSITION

THE Eleventh Annual Convention and Exposition of the Coal Division of The American Mining Congress, held at Cincinnati, Ohio, May 7-11, "rolled the dice," to the most successful, interesting and colorful meeting held in several years. Large groups of coal mining executives, operating officials, engineers and manufacturers were in attendance. In fact, every coal producing district in the United States was well represented, some 431 companies sending their officials to cooperate in the discussions and inspect the exhibits. This is the largest number of companies represented in several years and comes very near the top when the record for companies was 435. The total registration was 2,287, and the following analysis gives a fair picture as to how completely the industry responded to the invitation "for to see and for to hear."

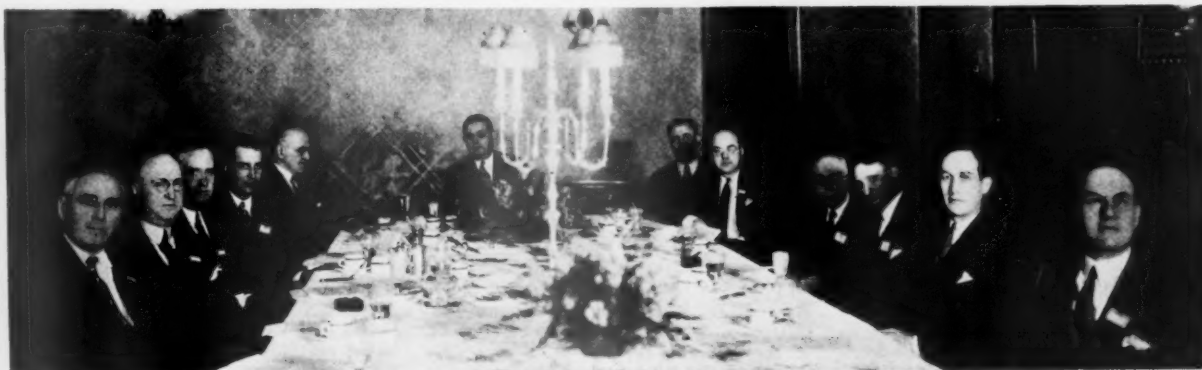
High praise goes to C. M. Lingle, vice president of the Buckeye Coal Company and chairman of the National Program Committee, and his industry-wide committee for the very interesting, instructive and well prepared program. High praise, too, is due the Manufacturers Section of the Coal Division for the magnificent exhibit which it sponsored. While considerable publicity was given as to who was responsible for this year's great meeting, we wish again to present the names of those who gave of their time and ability to produce so outstanding a result. The members of the Program Committee are as follows:

State	Coal Companies Represented	Individual Attendance
Alabama	5	10
Colorado	2	4
District of Columbia ..	1	2
Illinois	23	104
Indiana	35	202
Iowa	1	2
Kentucky	79	191
Maryland	1	1
Massachusetts	1	2
Michigan	3	4
Missouri	11	11
Nebraska	1	1
New York	2	2
Ohio	64	264
Oklahoma	1	7
Pennsylvania	64	165
Tennessee	11	16
Utah	1	1
Virginia	6	23
West Virginia	113	306
Wisconsin	1	2
Wyoming	6	7
22	431	1,327
Miscellaneous*		76
Manufacturers Representatives		884
Total		2,287

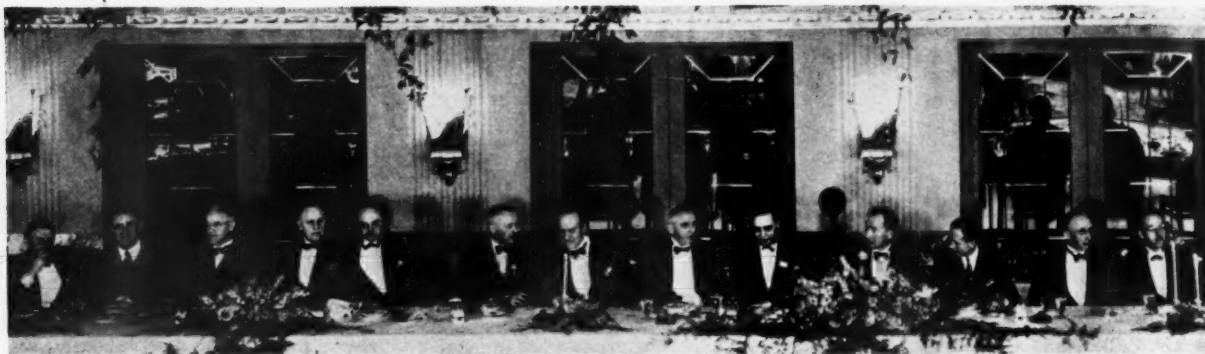
*Miscellaneous includes Professors of Mining, students, Bureau of Mines and State Department of Mines representatives.

District Chairmen: I. N. Bayless, assistant general manager, Union Pacific Coal Co.; C. W. Gibbs, general manager, Harwick Coal & Coke Co.; C. F. Hamilton, vice president, Binkley Coal Co.; Chas. W. Connor, superintendent of mines, Nellis Coal Corp.; D. A. Reed, manager of operations, Consolidation Coal Co.; C. A. Gibbons, general manager, Susquehanna Collieries Co.

Members: James M. Cook, general superintendent, Imperial Coal Corp.; A. B. Kelley, general manager, Humphreys Coal & Coke Co.; L. E. Young, vice president, Pittsburgh Coal Co.; Thos. G. Fear, assistant to president, H. C. Frick Coke Co.; Harry M. Moses, general superintendent, United States Coal & Coke Co.; L. J. Lorms, assistant to president, Lorain Coal & Dock Co.; W. P. Vance, general superintendent of mines, Butler Cons. Coal Co.; T. F. Whelan, general superintendent, Pittsburgh & Erie Coal Co.; D. D. Dodge, vice president, W. J. Rainey, Inc.; F. S. Pfahler, president, Superior Coal Co.; J. B. F. Melville, receiver, Electric Shovel Coal Corp.; P. L. Donie, vice president, Little Betty Mining Corp.; T. J. Thomas, president, Valier Coal Co.; Carl P. Hayden, general manager, Sahara Coal Co.; Fred S. McConnell, vice president, Enos Coal Mining Co.; R. E. Salvati, manager, Pond Creek Pocahontas Co.; W. J. Borries, general manager, Dawson Daylight Coal Co.; Jos. L. Osler, receiver, Blackwood Coal & Coke Co.; F. M. Medaris, general manager, Harvey Coal Corp.; Pearl Bassham, vice president, Harlan-Wallins



A special meeting of the Board of Directors and Representatives of Subscribing Companies. From left to right: S. L. Mather, The Cleveland-Cliffs Iron Co.; Henry O'Brien, The Berwind-White Coal Mining Co.; D. D. Moffatt, Utah Copper Co.; Erle V. Daveler, Utah Copper Co.; J. F. Callbreath, The American Mining Congress; Howard I. Young, American Zinc, Lead and Smelting Co.; W. J. Jenkins, Consolidation Coal Company of St. Louis; Paul Weir, Bell & Zoller Coal & Mining Co.; D. E. Jackson and H. R. Heumne, Wolf Tongue Mining Company; J. B. Putnam, Pickands, Mather & Co.; A. E. Bendelari, The Eagle-Picher Lead Co.



At the Speakers' Table, Annual Banquet, were John T. Ryan, W. J. Jenkins, Chas. W. Connor, Chas. F. Hamilton, Paul Weir, Scott Turner, A. E. Bendelari, S. L. Mather, Howard I. Young, Ralph E. Taggart (Toastmaster), J. B. Putnam, C. W. Gibbs, Geo. R. Delamater.

Coal Corp.; E. R. Price, superintendent, Inland Steel Co.; Milton H. Fies, vice president, Debardeleben Coal Corp.; L. E. Geohegan, vice president, Gulf State Steel Co.; Geo. H. Rupp, manager, Mining Department, Colorado Fuel & Iron Co.; H. H. Bubb, general superintendent, American Smelting & Refining Co.; Horace Moses, general manager, Gallup American Coal Co.; Samuel Tescher, general superintendent, National Fuel Co.; J. M. Hughes, vice president, Northwestern Improvement Co.; G. A. Knox, superintendent, Gunn-Quealy Coal Co.; R. J. Ireland, Jr., assistant to president, Owl Creek Coal Co.; Otto Herres, assistant manager, U. S. Fuel Co.; B. H. Stockett, general manager, Weston Dodson Co., Inc.; R. E. Hobart, mechanical superintendent, Lehigh Navigation Coal Co.; A. B. Jessup, vice president, Jeddo-Highland Coal Co.

The Board of Governors of the Manufacturers Section, sponsoring the exposition, is composed of the following companies and their representatives:

The W. Tyler Company, Geo. R. Delamater.

Sullivan Machinery Company, C. B. Officer.

Hendrick Manufacturing Company, Bruce G. Shotton.

Goodman Manufacturing Company, Wm. E. Goodman.

A. Leschen & Sons Rope Co., W. C. Richards.

Jeffrey Manufacturing Company, Roy L. Cox.

National Carbon Company, E. A. Williford.

General Electric Company, L. W. Shugg.

Ohio Brass Company, J. C. Wilson.

Westinghouse Electric & Manufacturing Co., P. H. Grunnagle.

Mine Safety Appliances Co., John T. Ryan.

Phillips Mine & Mill Supply Co., J. Milton Duff.

Roberts & Schaefer Co., Frank E. Mueller.

Myers-Whaley Company, Charles C. Whaley.

At the annual meeting of the Manufacturers Section, held during the convention, Geo. R. Delamater, assistant vice president, The W. S. Tyler Company, was elected chairman of the Manu-

All of the Convention Papers, together with a full description of the Exposition, will appear in the 1934 Year Book on Coal Mine Mechanization, which will be ready for distribution July 1st.

facturers Section for the year 1934-35, with the following officers: First vice chairman, C. B. Officer, Sullivan Machinery Company; second vice chairman, Bruce G. Shotton, Hendrick Manufacturing Company; and third vice chairman, Wm. E. Goodman, Goodman Manufacturing Company.

The following distinguished men are directors of the organization: Howard I. Young, president, American Zinc, Lead & Smelting Co.; D. D. Moffat, vice president, Utah Copper Company; J. B. Putnam, Pickands, Mather & Company; D. A. Callahan, president, Callahan Zinc-Lead Company; W. J. Jenkins, president, Consolidated Coal Company of St. Louis; Robt. E. Tally, vice president, United Verde Copper Company; Paul Weir, vice president, Bell & Zoller Coal & Mining Co.; Donald B. Gillies, president, Corrigan McKinney Steel Company; Clinton H. Crane, president, St. Joseph Lead Company; A. B. Jessup, vice president, Jeddo-Highland Coal Company; A. E. Bendelari, president, The Eagle-Picher Lead Company; Eugene McAuliffe, president, Union Pacific Coal Company; and Chas. H. Segerstrom, president, Nevada-Massachusetts Co., Inc.

The convention announced with considerable pride the election of E. J. Newbaker, vice president, The Berwind-White Coal Mining Company, to the office of chairman of the Coal Division. Mr. Newbaker was elected to succeed R. L. Ireland, Jr., vice president, Hanna Coal Company, who has served as chairman of the Division for the past year. He brings to the Division a wide knowledge of mining affairs and one of the keenest minds in the industry. He has long been identified with the work of the national organization, and the Division is to be sincerely congratulated upon his acceptance of leadership in this work.

The American Mining Congress announced, at the convention, the election of Eugene McAuliffe, president, Union Pacific Coal Company, to the national board. This adds another distinguished gentleman to the coal group. Mr. McAuliffe is greatly interested in the work of the special committee of the Mining Congress on the United States Bureau of Mines, of which committee he is chairman.

The exposition was one of the greatest ever held by the Division. Not only were the exhibits representative and large, but they were very much alive and offered to the mining man the maximum of information on what the industry has to offer at this time. A plaque of honor for the finest exhibit was awarded by written vote of attending delegates to the Jeffrey Manufacturing Company. The Sullivan Machinery Company was a close runner-up for this honor, with special honor mention being given to the Goodman Manufacturing Company, John A. Roebling's Son Company, and the United States Steel Corporation group.

Cadmium Industry in 1933

THE production of metallic cadmium in the United States in 1933 amounted to 2,276,933 pounds, an increase of 185 percent over the output of 799,501 pounds in 1932 and 27 percent above the average for the five-year period, 1928-32. The average quoted price of cadmium was 55 cents a pound from late in January, 1931, throughout 1932 and 1933. In addition to metallic cadmium domestic manufacturers reported production of cadmium compounds—mainly cadmium sulphide, cadmium oxide, cadmium lithopone, and cadmium selenide—the cadmium content of which was 401,400 pounds in 1933, compared with 259,800 pounds of cadmium in compounds in 1932, an increase of 55 percent. The cadmium content of cadmium compounds in 1933 was 27 percent larger than the average quantity for the five-year period, 1928-32. Imports of cadmium metal into the United States in 1933 amounted to 108,861 pounds. No imports were recorded for 1932.—U. S. Bureau of Mines.

MINING EVENTS

Coal

OF INTEREST to the industry are the findings of the Darrow Board on the operations of the bituminous code. Senator Nye of North Dakota, who was largely responsible for the formation of the Darrow Review Board, stated in the Senate that the Department of Justice has sent agents into the coal areas of West Virginia to investigate. Mr. Darrow has declared that code authorities there were guilty of malfeasance in office.

In view of the interest in the Darrow Board report on the operations of the bituminous code, we herewith reproduce in full that section of the National Recovery Review Board's report to the President on the bituminous industry as it appears in the original report:

FINDINGS AND RECOMMENDATIONS

The above entitled proceeding came on to be heard before the National Recovery Review Board on the eleventh day of April, 1934, at the hour of 10 o'clock a. m.; upon the several complaints of the small enterprises against the local and general Code Authority, there appearing in person and with right of representation: James P. Burns, Jr., of Sardis Coal Company, Fairmont, W. Va.; J. W. Kennedy, of the Lowber Gas Coal Company, Pittsburgh, Pa., and G. M. Hochheimer, of Lyon Coal Co., Uniontown, Pa., and the following Code Authorities who appeared the first day but did not return for the hearing on the following day, to-wit: Lisle White, of the Northern West Virginia subdivision, and C. F. Hosford, of the Western Pennsylvania subdivision.

From the evidence adduced at the above hearing which is uncontroverted the following findings are submitted:

FINDINGS

1. "That the Code Authority for the subdivision of Northern West Virginia was appointed by R. M. Hite, a large operator who acted as chairman of an operators' meeting, and consists of a group representative of large producers in the industry only—most of the men having large financial interests in coal companies."

2. "That the Code Authority for the subdivision of Northern West Virginia has oppressed small enterprises through price fixing under the code:

(a) The prices fixed for low and high sulphur coal are the same, forcing the high sulphur coal producers out of business. They used to compete by price differential."

3. The Code Authority for the subdivision of Northern West Virginia has utilized its position to take all the railroad business from the small enterprises; and has given the railroads the favorable price of 20 cents off the list price to every other purchaser.

4. That the Code Authority for the subdivision of Pittsburgh is composed of representatives of large producers in the industry only.

5. "That the Code Authority for the subdivision of Pittsburgh has oppressed small enterprises through price fixing under the code:"

(a) Changed price of coal 20 cents per ton effective March 1, 1934, and did not notify the small producer until March 5; in the meantime the large companies sold 100,000 to 200,000 tons of coal at the reduced price.

(b) The price differential of 10 cents per ton fixed by the Code Authority between raw coal and washed coal was reduced to 5 cents per ton by Code Authority which is not in proportion to the cost of 20-25 cents per ton for washing the coal. The result was to put the raw coal operator (which is the small operator as a rule) out of business.

6. That the code has put a number of small coal operators out of business, thus reducing employment (600 workers in one company).

7. Proceedings before the Code Administrator for the hearing and determination of complaints are too slow.

RECOMMENDATIONS

1. That the President of the United States instruct the Administrator to disapprove the appointment of the Code Authority for the subdivision of Northern West Virginia and discharge them from office at once for the following reasons:

(1) Improper selection—selection was not in accordance with Article VII, Section 2 of the Code.

(2) Malfeasance in office.
(a) Oppression of small enterprises by price fixing without regard to grades of coal.

(b) Use of office to attract business from railroads.

(c) Discrimination in retail price to railroads.

2. That the President of the United States instruct the Administrator to disapprove the selection of the Code Authority for the subdivision of Pittsburgh and discharge them from office at once for the following reasons:

(1) Not truly representative of the industry as required by Article VII, Section 2 of the code (no small operator on Code Authority).

(2) Misfeasance in office.

(a) Oppression of small enterprises by secret price manipulation.

(b) Arbitrary fixing of price without regard to cost.

3. That the code be amended as follows:

Amend Article VI, Section 2 to include the following provisions:

(c) The marketing agency or agencies shall take into account in its classification the sulphur content of coal and establish grades thereof for which a fair price differential shall be established by the Code Authority.

Amend Article VI, Section 2 to include the following provision:

(f) The marketing agency or agencies, or the Code Authority shall take into account in determining the fair market price of coal the cost of any processing in preparing the coal for market and allow a fair price differential therefor.

Amend Article VI, Section 4 to read as follows:

The fair market price of Bituminous Coal, established as aforesaid by such agencies and Code Authorities, shall be published within 15 days after the effective date of this code, after approval by the Presidential Member of the Code Authority (acting under the direction of the Administrator), who in his approval may permit a reduction or increase in said prices by action of said agencies or authorities within the limits which he may prescribe, and thereafter shall be published whenever any change is made therein at least three days before the effective date of the change, and not less frequently than once each month, and on the first of the month. Simultaneously with such publication, said fair market prices of Bituminous Coal shall be transmitted by the Code Authorities to the National Recovery Administrator for his further review and subsequent action. Should any employer object to the change in price, he may file with the Presidential Member of the Code Authority a complaint setting forth his objection, and, if he requests in his complaint that the change in price be held in abeyance it will be so pending the final determination by the Presidential Member of the Code Authority.

4. That the favorable price to the railroads be equalized with that of other industries so that they will bear the proper proportion of the cost of production.

5. That the Administrator be provided with the facilities necessary to determine the complaints within a reasonable time after they are made.

ACTING at the direction of the Administrator, Division Administrator K. M. Simpson extended official NRA recognition to the subdivisional code authority of Division 5 for the bituminous coal industry of the state of Utah, composed of the following: Otto Herres, J. B. Marks, Otto Heiner, W. C. Stark, F. A. Sweet, Albert Christensen, and M. O. Carlson.

A \$5,000,000 corporation has been formed in Great Britain with the object of erecting and operating a chain of distillation plants for the production of gasoline from coal, according to a London press item received from the American consulate-general, London, made public by the Commerce Department.

The new organization is to be known as the National Coke and Oil Company, Ltd., and its 20 plants are to be erected at Belvidere, Leeds, Edinburgh, Glasgow, Newcastle, Manchester and Cardiff.

The scheme is the culmination of over three years' intensive experimental research work in the plant on the Cannock Chase coal field. Gasoline has been produced from coal at this plant and marketed since last September at the rate of 1,000 gallons a day.

It will take four months for the first of the new distillation plants to be started, according to the report. When the chain is in full operation the company hopes to produce approximately 20,000 gallons of gasoline a day from coal.

THE TOTAL production of soft coal during the week ended May 12 is estimated at 6,237,000 net tons. This compares with 6,310,000 tons in the preceding week, and 5,080,000 tons in the corresponding week of 1933. The total production of soft coal during the present year to May 12 amounts to 139,458,000 tons. Compared with the same period in 1933, this shows a gain of approximately 30 percent.

Anthracite production in Pennsylvania during the week ended May 12 is estimated at 1,088,000 net tons. This is a sharp decrease—273,000 tons, or 20.1 percent—from the preceding week, but compares with 724,000 tons produced in the week ended May 13, 1933. Cumulative production of hard coal during the present year to May 12 is approximately 51 percent higher than in the corresponding period last year.

DIFFERENCES between the striking coal miners in the Alabama region and a large operator were settled this week when the DeBardeleben Coal Corporation recognized the United Mine Workers' Union. It is the first time in the company's existence that the union was recognized.

Differences involved wage and hour conditions under the code. The walkout involved numerous clashes and resulted in two deaths and much violence.

More than 1,000 miners would go back to work this week under terms of the agreement signed by union officials and Milton H. Fies, executive vice president of the coal corporation.

BITUMINOUS operators of Division No. 5, comprising coal mining operations in Missouri, Kansas, Arkansas, Oklahoma, and Texas, are still conferring with union officials in an effort to work out a compromise.

The conferences, being held in Kansas City, have thus far failed to find a solution to the claims of the unions and the concessions offered by mine operators. Differences involve wage and hour proposals under the code. Thousands of miners are out of work in the affected area. Reports are that the conferees hope to work out an effective compromise shortly which will allow the men to return to work and the mines to resume operations.

DESPITE the difficult conditions surrounding the coal industry over most of 1933, the tonnage of bituminous produced by mechanized mining showed an increase of 5.6 percent over the year preceding, according to Bureau of Mines.

In general, the conditions of 1933 were not such as to stimulate the use of machinery. During the first half of the

WHY DON'T THEY HATCH?



—Washington Post.

year declining prices and wage rates tended to discourage mechanization. In some cases machines were deliberately laid by in an effort to spread employment. In the early months, especially, the typical coal company had no money to buy new equipment and was often forced to defer repairs even at the cost of laying the machine idle. The higher levels of wages and prices brought about by the code, though favorable to mechanization in the long run, came too late in the year to have much effect on the purchase of new machines during 1933. Manufacturers, however, report a revival of demand for repair parts in the closing months of the year.

In these circumstances, an increase in the mechanical output is proof that mechanical loading is now firmly established in the coal fields of the United States. The total tonnage mechanically mined increased from 35,817,000 tons in 1932 to 37,820,000 in 1933. Over the industry as a whole one ton out of eight is now won by mechanical loading.

These figures refer only to mechanical devices designed to reduce the labor of hand shoveling into mine cars, although in a larger sense the introduction of any machine, such as the cutting machine or the haulage locomotive, is a form of mechanization.

The figures are a preliminary summary of reports courteously furnished by coal operators to the Bureau of Mines. Final returns may increase the totals slightly, and the Bureau will appreciate advice as to omissions if any are noted. Acknowledgment is made of the courtesy of the manufacturers of loading equipment and the cooperation of the Pennsylvania Department of Mines, the Illinois Department of Mines and Minerals, Mr. Jonas Waffle of Indiana, and the state coal mine inspector of Wyoming, in furnishing information on operations in their states.

THE TONNAGE of bituminous coal produced by mechanized mining in 1933 is summarized below. The total of 37,820,000 tons relates only to operations

underground. It does not include coal loaded by power shovels in strip pits, which amounted to approximately 19,600,000 tons in 1933. Neither does it include anthracite, 5,433,340 net tons of which were mined mechanically in 1932.

Of the total tonnage handled mechanically, 47.2 percent was loaded by mobile loading machines, 2.6 percent by scraper loaders, and 50.2 percent by pit-car loaders and conveyors, including duckbills.

TONNAGE OF BITUMINOUS COAL PRODUCED BY MECHANIZED MINING IN 1933

Loaded by machines:

	Net tons	Percent
Mobile loading machines	17,865,000	87.1
Scraper loaders	990,000	4.8
Duckbills and other self-loading conveyors	1,656,000	8.1
Total loaded by machine	20,511,000	100.0

Handled by conveyors:

Duckbills and other self-loading conveyors	1,656,000	8.7
Pit-car loaders	11,413,000	60.2
Other hand-loaded conveyors	5,896,000	31.1
Total handled by conveyors	18,965,000	100.0

Recapitulation, less duplications:

Mobile loading machines	17,865,000	47.2
Scraper loaders	990,000	2.6
Pit-car loaders	11,413,000	30.2
Other conveyors, including duckbills	7,552,000	20.0
Grand total, mechanized mining	37,820,000	100.0

Commercial stocks of bituminous coal declined during the first quarter of 1934 and on April 1 the total reserves in the hands of industrial consumers and retail dealers stood at 28,424,000 tons. During the first two months of the year production fell considerably short of market requirements and 5,740,000 tons were withdrawn from reserves. The trend was abruptly reversed in March when the prospect of labor troubles and price increases resulted in heavy purchases for storage. The net reduction in stocks during the first quarter was 4,416,000 tons, or 13.4 percent.

Although present stocks are less than at the beginning of the previous quarter, they are still substantially higher than on April 1, 1933, when the total commercial reserves amounted to 23,843,000 tons. This, however, was obviously subnormal, being less than at the corresponding season of any year since 1920. Moreover, the increase that has occurred in the past year is accounted for entirely by larger reserves in the hands of industrial consumers. Retail stocks of bituminous coal are still slightly below the level of a year ago.

In making comparisons of stocks on different dates it is necessary to take into consideration the highly variable

factor of consumption. For this reason the best measure of reserves is to express them in terms of the number of days they would last at the current rate of consumption. At the rate of consumption prevailing in March, the total stocks on April 1 were sufficient to last 25 days. On the corresponding date of last year, despite the fact that the actual quantity on hand was 4,581,000 tons less than at present, the stocks were equivalent to 27 days requirements.

In addition to the tonnage of bituminous coal in the hands of industrial consumers and retail dealers, there was 3,043,000 tons of soft coal on the commercial lake docks on April 1 and 1,151,000 tons standing in cars unbilled at the mines or in classification yards. A year ago the stocks on the lake docks amounted to 3,628,000 tons and the unbilled loads stood at 1,814,000 tons.

The outstanding feature of the coal market during March was the contra-seasonal increase in industrial stocks of bituminous coal. Ordinarily consumers tend to clean up their winter reserves before contracting for additional tonnage. This year, however, the prospect of labor disturbances and an advance in prices induced many consumers to replenish their reserves earlier than usual. As a result nearly 2,000,000 tons were added to industrial reserves during March.

Most of the increase in industrial stocks during the month was accounted for by the railroads, whose reserves rose from 4,260,000 tons on March 1 to 5,595,000 tons on April 1, a gain of 31.3 percent. Relatively sharp increases were likewise reported by the cement mills and byproduct coke ovens, but the net increase for the other major classes of consumers was not significant. In fact, stocks at steel works fell off slightly during the month. The decline in stocks at steel plants is largely accounted for by the fact that most of the large steel companies operate their own coal mines and were not alarmed by the threat of rising prices to the same extent as other consumers less favorably situated.

With the arrival of milder weather, industrial consumption of soft coal has declined. In March the total consumption was 24,618,000 tons, or an average of 794,000 tons per day. Compared with daily rate prevailing in February this is a decrease of 3.3 percent. Although sharp increases were reported in the rate of consumption at steel works, coke ovens and cement mills, these gains were more than offset by reduced consumption by the electric utilities, railroads, and general industries.

In marked contrast to the trend of industrial stocks of bituminous coal, the heavy draft on stocks of domestic fuels continued during March. Compared with March 1 stocks of soft coal in retail yards on April 1 show a decrease of 10.2 percent, retail stocks of anthracite a decrease of 8.0 percent, and retail stocks of coke a decrease of 16.3 percent. Stocks of hard coal in producers' storage yards and on the upper lake docks were also reduced in March and stocks of coke at merchant byproduct plants on April 1 were less than at any time since early in 1929.

THE TOTAL production of anthracite (which includes colliery fuel) for the week ending May 12, as estimated by the Bureau of Mines, amounted

to 1,088,000 net tons. This is a decrease, as compared with production of the preceding week, of 273,000 net tons, or 20.1 percent. Production during the corresponding week of 1933 amounted to 724,000 tons.

ESTIMATED PRODUCTION OF ANTHRACITE (Net Tons)

1934		
	Week	Daily Average
April 28	1,485,000	247,500
May 5	1,361,000	226,800
May 12	1,088,000	181,300

1933		
	Week	Daily Average
April 28	675,000	112,500
May 5	664,000	110,700
May 12	724,000	120,700

Cal. yr. to May 12, 1934	25,525,000
Corresponding period, 1933	16,880,000
Coal yr. to May 12, 1934	7,030,000
Corresponding period, 1933	4,223,000

BLIND MAN'S BUFF



—Washington Post.

ACCORDING to a preliminary statement issued by the Bureau of Foreign and Domestic Commerce, Washington, D. C., the exports of anthracite in the month of March, 1934, amounted to 92,363 net tons. Of this amount, Canada received 92,324 tons. Other anthracite exports ranged from 2 to 28 tons.

Bituminous coal exports for the month of March, 1934, amounted to 548,769 net tons, of which Canada received 494,186 tons; Cuba, 44,111; Brazil, 7,221; Netherlands West Indies, 1,788; Netherlands East Indies, 849; British Guiana, 363, and Mexico, 138. Other bituminous exports ranged from 1 to 47 tons.

Coke exports for the month of March, 1934, amounted to 49,912 net tons, of which Canada received 48,492 tons; Cuba, 782, and France, 601. Other coke exports ranged from 2 to 11 tons.

PRELIMINARY figures now available indicate that 87 persons were killed in the coal mines of the United States in January, 115 in February, and 93 in March of the present year, a total of 295 for the first three months. For the similar period in 1933, only 236 lives were lost, an increase of 25 percent, which indicates that with the upward trend in business demanding increased coal production there is an increase in the number of accidents in the industry. However, while the number of fatalities in our coal mines increased 25 percent in the first three months of 1934 as compared with the first three months of 1933, the accident rate decreased as there was approximately an increase of 34 percent in coal tonnage.

Arkansas and Texas are the only coal mining state to have come through the first three months of 1934 without a fatality and Maryland, Montana, Oklahoma and Washington each had one.

One major disaster, a mine fire in Kentucky with five deaths, occurred in March, indicating that in all probability the year 1934 will not be anything like as free of major disasters as 1933, which had but one (with seven deaths) for the entire year. However, six months elapsed between the time of occurrence of the only major disaster in 1933 and the above mentioned one in March, 1934.

WITHIN the coal-mining industry of the United States there is, from a safety viewpoint, what may be called an "inner" industry of great magnitude and merit, although it has received essentially no public notice; this "inner" industry comprises those mining companies that produce their coal without accidents causing loss of life to employees.

While accidents at coal mines take the life of a thousand or more persons each year, according to Scott Turner, director of the United States Bureau of Mines, a large part of the country's yearly coal supply comes from mines in which no fatal accidents occur.

This fact is revealed by statistics compiled by the Demographical Division of the Health and Safety Branch of the United States Bureau of Mines. The figures relate to bituminous coal mines, and they show that, in 1932, the latest year for which complete figures are available, 4,844 mines whose combined output was 216,885,249 tons of coal, representing 70 percent of all the bituminous coal that was mined in the country that year, operated without loss of the life of any worker. These mines employed 269,142 men, or 66 percent of the total number engaged in all bituminous mines, and they worked 293,145,961 man-hours, or 61 percent of the total amount of work done at all bituminous mines.

Employing more than a quarter million of men and working nearly 300 million man-hours without a fatal accident, this progressive portion of the bituminous coal mining industry is a large contributor to industrial safety in the United States. The Bureau of Mines takes pleasure in calling attention to this fact and believes that these companies deserve special merit because, by preventing fatal accidents in their mines, they are setting a precedent which is contributing greatly to making coal mining a safer occupation, this improvement having been especially evident during the past three or four years.

METALLIC RESERVES



—The Washington Post.

That this "inner" industry in bituminous coal mining is growing is indicated by Bureau of Mines accident statistics for 1930, 1931, and 1932, which show that an increasing proportion of the bituminous coal industry is being operated without fatalities. The percentage of the industry in each of these years operating without fatal accidents was as follows:

	Men	Man-hours	Production
1930.....	55.5	51.5	49.8
1931.....	60.9	55.3	53.6
1932.....	66.2	61.1	70.0

These figures are most encouraging, and the United States Bureau of Mines believes that the rapid progress of the last few years in accident prevention in the bituminous coal mines of the United States would be greatly accelerated by more rapid adoption by mining companies of well-known safety measures, such as the use of rock dust, permissible explosives, permissible mining equipment, first-aid training, and safety organization. As measures of this type are adopted by an increasing number of companies, a corresponding reduction in accidents and accident costs may be expected.

Copper

AFTER many months of negotiations the Code of Fair Competition for the copper industry was approved April 21. A Code Authority of 11 members representing the various groups involved in the development of the code, has been selected. It includes: E. T. Stannard, president, Kennecott Corporation; C. F. Kelley, president, Anaconda Copper Mining Co.; L. S. Cates, president, Phelps Dodge Corporation; A. E. Petermann, vice president, Calumet & Hecla Consolidated Copper Co.; G. A. Ellis, director, United Verde Copper Co.; B. N. Zimmer, vice president, American

Metals Co.; F. H. Brownell, vice president, American Smelting & Refining Co.; Clinton H. Crane, president, St. Joseph Lead Co.; Pope Yeatman, consulting engineer; W. A. Anderson, vice president, John A. Roebling's Sons Co.; and W. M. Goss, secretary, Scovill Mfg. Co. E. T. Stannard was elected chairman and R. R. Eckert, secretary-treasurer and sales clearing agent.

The salient features of the code as approved and adopted follows:

HOURS OF LABOR

1. On and after the effective date of this code no employee shall be permitted to work in excess of 40 hours per week, averaged over a three-month period, or in excess of eight hours in any 24-hour period except as provided.

WAGES

1. The minimum wage rates (except as hereinafter otherwise provided) for this industry for the various districts shall not be less than as follows:

	Cents per hour
(a) Great Lakes Wage District:	
Surface Labor	32½
Underground Labor	37½
(b) Northeastern Wage District:	
Surface Labor	37½
(c) Southeastern Wage District:	
Surface Labor	35
(d) Southwestern Wage District:	
Surface Labor	30
Underground Labor	45
(e) Northwestern Wage District:	
Surface Labor	40
Underground Labor	47½

provided, however, that minimum wage rates in effect in any district on March 1, 1934, which were above the minimums specified herein for that district shall in no case be reduced; and provided further, that the underground rate in the Ray District of Arizona shall be not less than 38 cents per hour.

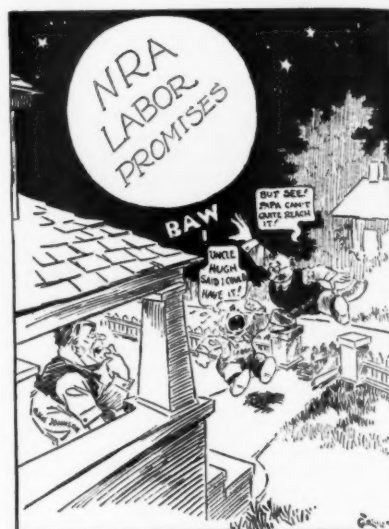
3. If an equitable adjustment of the differentials in the wage rates above the minimums fixed in this code has not been made since July 1, 1933, there shall then be such adjustment, if necessary, made within 60 days from date of the approval of this code. Such equitable adjustment shall mean that the differentials in amount existing prior to the formulation of this code shall be maintained for employees other than persons enumerated in article III, section 3, paragraph (b), provided, however, that in no event shall hourly rates of pay be reduced.

PRODUCTION AND SALES¹

The existence in the United States of large surplus stocks of copper has created a condition under which the selling price of the product of this industry has been unduly depressed. Further unrestricted overproduction can only result in further accumulations and an aggravation of the foregoing condition.

Accordingly, for the purpose of conserving a natural resource of national importance; of cooperating in the highest possible degree in the National Recovery program, particularly with reference to employment; and of bringing about a sound and stable basis for the industry as a whole, the members of the

LED TO EXPECT TOO MUCH



—Washington Evening Star.

industry, the holders of stocks of copper and others interested, may enter into voluntary agreements for the attainment of any of the following purposes, subject in each case to the approval of the Administrator and the Code Authority, which agreements shall only be binding on members parties thereto:

1. To regulate copper production in the United States with due regard to consumptive demand, the liquidating of surplus stocks and the necessity of maintaining employment in the industry at the highest possible level.
2. To withhold, in whole or in part, surplus stocks from the market during the present emergency period.
3. To regulate, curtail, and allot the volume of current production in such manner as shall be agreed upon by the parties participating in such regulation, curtailment, or allotment.
4. To provide a plan involving a minimum sales price with due regard to cost of production and in connection therewith a plan for the regulation and allocation of sales; and
5. To take such other steps by negotiation and mutual agreement as may be deemed necessary for the accomplishment of the purposes hereinbefore set forth.

TRADE PRACTICES

The following acts as described shall constitute unfair methods of competition by members of the industry in respect of copper sold and/or delivered for consumption in the United States:

1. The sales or exchange of copper in refinery shapes at premiums or discounts other than those established and recognized in the trade, and in accordance with statements filed with the Code Authority;
2. The sale, transfer, or exchange of copper in a manner planned and effective to impair or defeat the purposes of this code;
3. The alloying of copper in any manner for the purpose of evading the provisions of this code;

4. A failure within 30 calendar days after receipt at plant to price custom copper, by-product and secondary copper material. Copper-bearing material received at plant prior to the effective date of this code shall be exempt from this provision;

5. The sale of copper to persons other than consumers of copper and dealers, provided, however, that there shall be no prohibition against exchanges of copper customarily heretofore made between producers and/or custom smelters;

6. Sales of copper made for delivery further ahead than the three months following the month of sale.

This code and the provisions thereof shall be the standard of fair competition for the copper industry in the United States, and every violation of the standard established in the code shall be deemed an unfair method of competition and shall subject the party guilty of any such violation to penalties as provided in title I of the act.²

APPLICABILITY OF CODE TO VARIOUS OPERATIONS

1. If any member of the industry is also a member of any other industry, provisions of this code shall apply only to that portion of its business which is a part of the copper industry.

2. Where there is any question as to whether copper is the major production from the operations which do or which might produce lead, zinc, gold, silver, or other materials, then in any and every such event the question as to which code of fair competition shall govern such plant or mine operations of any such member of this industry shall be referred to a coordination committee. This coordination committee shall be composed of two members to be appointed by each of the Code Authorities for such industries as may be involved in each particular question. In the event such committee is unable to reach a majority conclusion, then either the committee shall elect an additional impartial member or upon their failure so to agree on such additional impartial member, the Administrator then may appoint such additional impartial member. Any member of the industry, the operations of which may raise such a question, shall file a statement of fact with the Code Authority for its industry, and such statement shall contain a statement of its preference as to the code it would prefer to have such operations be governed by, and such preference shall be granted unless such coordination committee shall find that the granting thereof would be unfair in view of the rights of others or that it would have a tendency contrary to the effectuation of the policies of the act. Any action taken by the coordinating committee shall be referred to the Administrator and shall be subject to his disapproval.¹

3. Within 10 days after the effective date of this code, any member of this industry may file such statement of fact and preference as to being governed by any of such other codes which may at that time be in effect. Thereafter upon any such other code becoming effective, such statement may then be filed; provided, however, that until any such statement is filed and decision is made thereon by such coordination committee, such operation of such member of this industry shall be governed by the provisions of this code.

The Code Authority is gradually taking steps to coordinate the industry for the handling of production and the liquidation of stocks. W. A. Janssen, of the NRA, has replaced H. O. King as Deputy Administrator for the copper group. Mr. Janssen is already handling codes covering lead, zinc, iron, manganese, antimony, aluminum, and other industries whose codes have not yet been approved.

The secretary of the Code Authority has advised the industry of the interpretation of the rules and regulations with reference to "Blue Eagle Copper" and has mailed a letter to all known holders of duty-free copper in this country stating that in order to have their copper available as Blue Eagle copper they must agree to sell it as provided in the new article 7, section 8, of the copper code. Holders of copper stocks, while notifying the sales clearing agent of the Code Authority of their willingness to abide by the copper code, must inform him of the tonnage they had on hand April 30, 1934, and of all subsequent changes in this tonnage. The authority letter states that the NRA Administrator has approved the authority's resolution of May 8, giving to all holders of copper in this country, including fabricators, the right to participate in the reduction of stocks as specified in article 7, section 8, provided they conform to the code and pertinent orders thereto. Such copper thereby becomes Blue Eagle copper. Section 8 specifies that any sales in excess of the monthly book of 30,000 tons covering current production of primary and secondary copper shall be allocated as follows: The first 50 percent of this stock is set aside for reduction of stocks of copper that may have been accumulated since October 1, 1933, of which two-fifths apply to accumulated stocks of secondary copper and three-fifths to accumulated stocks of by-product and primary copper. The remaining 50 percent of the excess sales or such larger amount, if the first 50 percent is not required as specified, is then allocated to reduction of copper stocks generally and not to sales quotas.

The secretary has also called the attention of all known holders of copper stocks to the provision of the code.

Fabricators and other consumers have been invited to make buying agreements, and it is said that large fabricators have already agreed to buy from 60 to 100 percent of their requirements.



—The Evening Star.

COPPER miners' strike in the Anaconda Company's properties at Butte has spread to smelters in Anaconda, and numerous other smaller unions there have threatened to go out in sympathy. Arrival there tomorrow of a representative of the National Labor Board may result in a satisfactory compromise. Miners there are asking for \$1.20 an hour and a six-hour day, while the NRA code provided a maximum of 45 cents an hour for the Northwest section.

Silver

FROM a general standpoint, it is obvious that the silver legislation will probably prove of no immediate benefit to silver mining. A study of the bill discloses that although it provides for the ultimate purchase of 1,700,000,000 ounces of silver, the price to be paid for this quantity is limited to not more than 50 cents an ounce. The Government is now paying 64½ cents for newly mined silver. The new legislation will not interfere with that schedule and, therefore, the hopes of Western mining men for "better days" in mining is still in the future. There appears, however, on the horizon the suggestion that "nationalization" may later result in a higher "fixed" price for newly mined silver, similar to what happened to gold as a result of devaluation.

Salient portions of the silver bill, entitled the "Silver Purchase Act of 1934," as introduced, together with the 50 percent tax provision which will be included in the House bill (must originate in Lower Chamber because it is a revenue provision) are herewith reproduced:

SEC. 2. It is hereby declared to be the policy of the United States that the proportion of silver to gold in the monetary stocks of the United States should be increased, with the ultimate objective of having and maintaining one-fourth of the monetary value of such stocks in silver.

SEC. 3. The Secretary of the Treasury is authorized and directed to purchase silver, at home or abroad, for present or future delivery with any direct obligations, coin or currency of the United States, authorized by law, or with any funds in the Treasury not otherwise appropriated, at such rates, at such times, and upon such terms and conditions as he may deem reasonable and most advantageous to the public interest until the proportion of silver to gold in the monetary stocks of the United States shall equal one-fourth of the monetary value of such stocks as set forth in section 2: *Provided*, That no purchases of silver shall be made hereunder (a) at a price in excess of the monetary value thereof or (b) whenever and so long as the monetary value of the stocks of silver is equal to or greater than 25 percentum of the monetary value of the stocks of gold and silver; *And provided further*, That no purchases of silver situated in the continental United States on May 1, 1934, shall be made hereunder at a price in excess of 50 cents a fine ounce.

SEC. 4. Whenever and so long as the market price of silver exceeds its monetary value or the monetary value of stocks of silver is greater than 25 percent of the monetary value of the stocks of gold and silver, the Secretary of the Treasury may, with the approval of the

President and subject to the provisions of section 5, sell any silver acquired under the authority of this act, at home or abroad, for present or future delivery, at such rates, at such times, and upon such terms and conditions as he may deem reasonable and most advantageous to the public interest.

SEC. 5. The Secretary of the Treasury is authorized and directed to issue silver certificates in such denominations as he may from time to time prescribe in a face amount not less than the cost of all silver purchased under the authority of section 3. There shall be maintained in the Treasury as security for all silver certificates heretofore or hereafter issued and at the time outstanding an amount of silver in bullion and standard silver dollars of a monetary value equal to the face amount of such silver certificates. All silver certificates heretofore or hereafter issued shall be legal tender for all debts, public and private, public charges, taxes, duties, and dues, and shall be redeemable on demand at the Treasury of the United States in standard silver dollars; and the Secretary of the Treasury is authorized to coin standard silver dollars for such redemption.

SEC. 6. Whenever in his judgment such action is necessary to effectuate the policy of this act, the Secretary of the Treasury is authorized, with the approval of the President, to investigate, regulate, or prohibit, by means of licenses or otherwise, the acquisition, importation, exportation, or transportation of silver and of contracts and other arrangements made with respect thereto; and to require the filing of reports deemed by him reasonably necessary in connection therewith. Whoever wilfully violates the provisions of any license, order, rule, or regulation issued pursuant to the authorization contained in this section, shall, upon conviction, be fined not more than \$10,000, or, if a natural person, may be imprisoned for not more than 10 years, or both; and any officer, director, or agent of any corporation who knowingly participates in such violation may be punished by a like fine, imprisonment, or both.

SEC. 7. Whenever in the judgment of the President such action is necessary to regulate the value of the money of the United States, he may by Executive order require the delivery to the United States mints of any or all silver by whomever owned or possessed. The silver so delivered shall be coined into standard silver dollars or otherwise added to the monetary stocks of the United States as the President may determine; and there shall be returned therefor in standard silver dollars, or any other coin or currency of the United States, the monetary value of the silver so delivered less such deductions for seigniorage, brassage, coinage and other mint charges as the Secretary of the Treasury with the approval of the President shall have determined: *Provided*, That, in no case, shall the value of the amount returned therefor be less than the fair value at the time of such order of the silver required to be delivered as such value is determined by the market price over a reasonable period terminating at the time of such order. . . . Any silver withheld in violation of any Executive order issued under this section or of any regulations issued pursuant thereto shall be forfeited to the United States, and may be seized and condemned

by like proceedings as those provided by law for the forfeiture, seizure and condemnation of property imported into the United States contrary to law; and in addition any person failing to comply with the provisions of any such Executive order or regulation shall be subject to a penalty equal to twice the monetary value of the silver in respect of which such failure occurred.

SEC. 8. The Secretary of the Treasury is hereby authorized to issue, with the approval of the President, such rules and regulations as the Secretary of the Treasury may deem necessary or proper to carry out the purposes of this act, or of any order issued hereunder.

Schedule A of Title VIII of the Revenue Act of 1926, as amended (relating to stamp taxes), is amended by adding at the end thereof a new subdivision to read as follows:

"10. Silver, etc., sales and transfers: On all transfers of any interest in silver bullion, if the price for which such interest is or is to be transferred exceeds the total of the cost thereof and allowed expenses, 50 percent of the amount of the amount of such excess. On every such transfer there shall be made and delivered by the transferor to the transferee a memorandum to which there shall be affixed lawful stamps in value equal to the tax thereon. Every such memorandum shall show the date thereof, the names and addresses of the transferor and transferee, the interest in silver bullion to which it refers, the price for which such interest is or is to be transferred, and the cost thereof and the allowed expenses. Any person liable for payment of tax under this subdivision (or anyone who acts in the matter as agent or broker for any such person) who is a party to any such transfer, or who in pursuance of any such transfer delivers any silver bullion or interest therein, without a memorandum stating truly and completely the information herein required, or who delivers any such memorandum without having the proper stamps affixed thereto, with intent to evade the foregoing provisions, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall pay a fine of not exceeding \$1,000 or be imprisoned not more than 6 months, or both. . . . The provisions of this subdivision shall extend to all transfers in the United States of any interest in silver bullion, and to all such transfers outside the United States if either party thereto is a resident of the United States or is a citizen of the United States who has been a resident thereof within 3 months before the date of the transfer or if such silver bullion or interest therein is situated in the United States; and shall extend to transfers to the United States Government (the tax in such cases to be payable by the transferor), but shall not extend to transfers of silver bullion by deposit or delivery at a United States mint under proclamation by the President or in compliance with any Executive order issued pursuant to section 7 of the Silver Purchase Act of 1934. The tax under this subdivision on transfers enumerated in subdivision 4 shall be in addition to the tax under such subdivision. This subdivision shall apply (1) with respect to all transfers of any interest in silver bullion after the enactment of the Silver Purchase Act of 1934, and (2) with respect to all transfers of any interest in silver bullion on or after May 15, 1934, and prior to the enact-

ment of the Silver Purchase Act of 1934, except that in such cases it shall be paid by the transferor in such manner and at such time as the Commissioner may prescribe."

Iron and Steel

EXPORTS of iron and steel products from the United Kingdom registered a sharp upward turn in March, according to a report received in the Commerce Department's Iron and Steel Division. Total foreign shipments during the month amounted to 171,469 tons, an increase of 29,477 tons over the preceding month and 16,469 gross tons over March, 1933.

British import trade in March in iron and steel products declined to 121,555 gross tons, a loss of 1,716 tons as compared with February but an increase of 24,692 tons over March, 1933.

Imports of iron and steel products into the United Kingdom during the first quarter of 1934 totaled 364,646 gross tons compared with receipts during the corresponding period of 1933 of 181,864 tons. Exports of such products during the first three months of 1934 amounted to 477,156 gross tons, against 439,252 tons in the 1933 period.

The brisk demand which has been noted in the German market for iron and steel scrap for several months continues unaltered, according to a report from Vice Consul J. H. Wright, Cologne, made public by the Commerce Department.

Prices remain strong due to extensive demand from the iron and steel manufacturing industry, which is enjoying good occupation. Further price increases are not unlikely, it is pointed out, and if such increases are carried through it will probably become profitable to use more pig iron as a substitute for scrap.

Imports of iron and steel scrap into Germany during the first quarter of 1934 totaled 103,924 metric tons, valued at 3,467,000 reichsmarks, compared with 139,924 metric tons, valued at 3,877,000 reichsmarks, during the corresponding period of 1933. The principal supplying countries during 1934 have been Belgium-Luxembourg, Great Britain, and the Netherlands.

Future purchases of foreign scrap, the report states, may meet with difficulties because of limited foreign exchange permits.

Zinc

THE EUROPEAN and world zinc situation was outlined in a splendid paper by O. W. Raskill, of London, before the annual meeting of the American Zinc Institute. In part, he said:

"World production during 1933, which totaled 985,000 long tons, showed an increase of 26 percent over that in 1932. This increase was divided equally between the United States and the rest of the world.

"The chief influence bearing on production outside the United States has, of course, been the activities of the International Cartel. After the breakdown in January, 1933, caused mainly by the proposals for excess production under fines, it was quickly reformed under the influence of the sharp fall in price which followed. Since then a more even course has been pursued punctuated at intervals, however, by frequent rumors at to dissension among its members.

"Stimulated by the steady increase in price which on July 11 attained a peak of £18 10s. 0d. per ton, excess production under fines took place, and in both May and June assumed the formidable total of 9,000 tons. Despite this, however, stocks held by the cartel continued to decrease, and on August 1, 1933, were 23,000 tons lower than at the beginning of the year. The favorable statistical position and the improvement in world trade enabled quotas to be raised from 45 to 50 percent of the Ostend basis from that date, while at the same time fines on overproduction were reduced. Stocks continued to decrease during August but subsequently every month, with the exception of November, showed a steady increase until February of this year. The position has, however, improved since then, and on March 1 stocks held by the cartel amounted to 129,000 long tons compared with 124,000 on August 1 and 147,000 on January 1, 1933. During March there was a further drop of 10,000 tons in stocks.

"The increase in production outside the United States during 1933 was mainly due to England, Belgium, and Rhodesia, the first two countries showing increases of 23 and 38 percent, respectively. The Rhodesian production was 17,800 long tons against nil in 1932, owing to the reopening of the Broken Hill plant, which had been closed at the beginning of 1931.

"In England the chief event of importance has been the purchase by the Imperial Smelting Corporation of the Sulphide Corporation's Seaton Carew works, which had a capacity of about 10,000 tons per annum. The Imperial Smelting Corporation, who also recently acquired the Delaville Spelter Co., are now the only zinc smelters left in operation in the country, and in view of their close connections with Empire—in particular Australian—mining and smelting interests, are in a very strong position. A further development of importance with regard to this concern has been the purchase through its recently formed subsidiary Improved Metallurgy, Ltd., of licenses for the patents dealing with vertical retorts from the New Jersey Zinc Co. It is claimed that this plant will produce 99.99 percent zinc and that the vertical retorts are more economical than the horizontal as regards running costs. A plant is being installed and it is understood that both retorts and re-fluxers will be running at full capacity within 12 months.

"As far as the large increase in the Belgian production is concerned, the Vieille Montagne company recently stated in their annual report that it was profitable during 1933 to produce beyond their quota under payment of fines. This is an illustration of the fact, which has become increasingly apparent, that the fines imposed by the cartel are not sufficiently high to prevent the larger producers increasing their output on any rise in price. It follows from this that an improvement in demand tends to be met by excess production under fines rather than by an increase in the general quota resulting from an improved stock position, at any rate until such improvement has been sustained for some time. This is the complaint of some of the smaller producers. On the side of the larger producers, however, it must be added that their sacrifice through curtailment is relatively larger owing to their higher overheads, and that owing

to the compensation received by the smaller producers from the pool, the system is not unfair.

"In other countries the most important development has been the decision of the German Government to finance the erection of the new electrolytic plant at Magdeburg. This will work on ores taken principally from the Bleischarley mine in Silesia, which were previously smelted in Poland, and will have a capacity of 40,000 tons per annum, which will make Germany independent of foreign supplies of electrolytic zinc, although there will probably continue to be some importation of spelter. It is understood that ownership is likely to be vested in the hands of the Government public works holding company—Deutsche Gesellschaft für Öffentlich Arbeiten—from whom the German Giesche company will rent the plant. Whether the new plant will ever be a low-cost producer is doubtful, and some measure of assistance may have to be undertaken by the German Government either in the form of an import duty or direct subsidy. The German producers themselves naturally favor protection, although this is a controversy which has been carried on with consumers for some time before the present government came into power, but it is in any case unlikely that the German Government will impose a direct import duty since, for one thing, the Belgo-German trade pact, which can only be cancelled on six months' notice, would not allow this step to be taken. The government, however, is vigorously pursuing a policy directed at making the country as self-sufficient as possible in base metals, and some form of assistance, whether as a direct subsidy or as an eventual compensatory import duty, will most probably be given.

"Two points of international importance are raised by the erection of the Magdeburg plant. The first is the effect on Polish and Belgian producers, who have up till now supplied the major proportion of German imports and the probable resultant intensification of competition in other markets; and the second is the necessary adjustment of quotas which will have to be made by the cartel. The second is of greater moment, as, if world consumption does not substantially improve, the sacrifice that other producers may be called upon to make or the alternative of Germany's withdrawal from the cartel, might conceivably cause its eventual break up. It has, however, survived greater difficulties than this one, and there is no reason to suppose that as long as there is a strong case for international control of

production, such control will not be continued. Unlike the case of tin, however, which looks like becoming wedded to a fair-weather restriction policy, the zinc industry has been united rather against the common evil of depression than through preference for low output and high prices.

"The situation in France remains somewhat obscure, on account of the possibility that the government may still decide to protect the home market for the benefit of domestic and colonial mines whose position has become extremely precarious, and of whom only four are now operating. Discussions have been dragging on for a couple of years at least, and it begins to look as if the opposition of the French consumers and of the Vieille Montagne concern, who are largely responsible for the 24-30,000 metric tons imported from Belgium, may lead to the idea of protection being shelved, although opposition against the dependence of France on imports of base metals and ores has been increasing during recent months.

"In Mexico the mines of the San Francisco Mines of Mexico, Ltd., are being reopened and an extension of the mill capacity from 400,000 to 580,000 long tons of ore per annum is being undertaken. The company's plans were held up for some time by the British Treasury ban on new capital issues, but the co-operation of the Union Corporation and the American Metal Co., who are the two chief shareholders, finally overcame this difficulty, and it is expected that it will be possible to operate the mine profitably even if the price of zinc were lower than it was when the mine was closed in December, 1931. It has been rumored that the Mexican corporation intends to erect a smelter in Mexico.

"During 1929 the entire Soviet industry produced only 4,000 tons of spelter, but in 1930 and 1931 the Konstantinov and Belovo works were opened, both of which were designed for an annual capacity of 25,000 long tons. Neither of these plants are, however, working at full capacity and the total Russian output during 1933 did not exceed 18,000 tons. Costs are reported to be high due to defective lay-out of the works and lack of skilled labor. Recently the Northern Non-Ferrous Metal Trust, to which the Belovo works were attached, has been dissolved, and the zinc industry has been placed under the direct control of the Chief Administration of the Non-Ferrous Metal Industry with the object of speeding up production.

"In Australia the Electrolytic Zinc Co. of Australasia maintained their production at 53,000 tons during the year ending June 30, 1933, the same level as in the previous year, but with the rise in prices the net profit of £223,000 showed an increase of over 160 percent compared with the previous year. Zinc accounts probably for about 80-85 percent of the total turnover of the company. It was reported in November that Mount Isa Mines, Ltd., in Queensland, intend to erect a large concentrator for their zinc residues, which have, up to date, been thrown on the dump. This report is, however, so far unconfirmed.

"In Canada, the Consolidated Mining & Smelting Co. are recovering zinc at Trail from fume produced from the lead blast-furnace slags. The oxide recovered is dissolved and electrolysed, and constitutes an important addition to the capacity of the plant.



—Washington Star.

"The Bast Metals Mining Corporation at Field, B. C., resumed operations in August as a result of the rise in metal prices. The mill is at present running at half capacity, producing about 250 tons of zinc concentrates per week. The Hudson Bay Mining & Smelting Co.'s smelter has been on full output and the capacity, which was formerly 20,000 long tons per year, has been extended by about 10 percent.

"Trepca Mines, Ltd., is an example of a lead-zinc mine which can earn satisfactory profits even with metal prices at a low level. Additions have been made to the milling plant, and during the last financial year the amount of ore treated rose by 33 percent to 535,000 long tons, while at the same time working costs were reduced by 17 percent to 14s. 4d. per ton of ore treated. The whole output is stated to have been disposed of until the end of 1937.

"The success of this company has led to the development of further properties in Yugoslavia, namely the Zletovo, Kaponik and Novo Brdo mines, in each of which the Central Mining & Investment Corporation has a considerable interest. Work is also reported on properties controlled by French and American capital.

"The world consumption of 995,000 long tons in 1933 was approximately 25 percent higher than in 1932, although the increase in the United States was 60 percent against only 13 percent in the rest of the world. In Europe, the countries which showed the largest increase were Belgium and Italy, with 51 and 37 percent, respectively, while consumption in the United Kingdom, France and Germany, which together represent about 60 percent of the European total, was disappointing, the increase being only 8, 3 and 0.5 percent, respectively."

PRODUCTION of zinc concentrates in the Tri-State field for week ended May 26 was 8,416 tons compared with 7,720 the preceding week. This exceeds production for any seven-day period in about three years. During the boom period, production never ran much over 10,000 tons weekly. Fifty-seven mills are running, another record in the Tri-State field. Shipments were 6,556 tons compared with 7,247 the preceding week. Purchases advanced from 3,700 tons to 8,080.

Price dropped \$1 a ton and stood at \$27 a ton for flotation and \$28 for coarse concentrates. While in the previous week mine operators put 4,000 tons in storage bins, now on a price of \$1 a ton less, they sold within about 300 tons of the entire output.

Lead output is also increasing in the field with production now averaging around 800 tons a week. While CWA work was open most of the lead "gougers" abandoned their small mines, but now that about all Federal work in the Tri-State district has ceased miners are back in the ground.—*American Metal Market.*

Lead

THE CODE for the lead industry has been approved. This code establishes a 40-hour work week of five 8-hour days. Minimum wages are fixed as follows: For unskilled labor in the mining division, 40 cents an hour above ground and 47½ cents an hour underground; for employees engaged in processing, 35 cents

an hour in the lead smelting and refining division, 40 cents an hour in the lead pigments division, and 35 cents an hour in the metallic lead products and metallic lead foil products division. In the smelting and refining division a 5-cent differential is given the South, making the southern rate 30 cents an hour.

The industry now has about 14,000 employees, or approximately one-half the 1929 number. Production of refined primary lead declined from 637,000 metric tons in 1929 to 251,000 tons in 1932, or from 36 percent of the world production to 22 percent. Large stocks of lead have been accumulated during the depression and now amount to more than a year's supply at the present rate of consumption. Mining operations have been restricted to about 46 percent of the 1929 level. The code is effective June 4.

Tin

SECRETARY OF STATE HULL has announced support of a proposed House investigation into the possibility of accepting tin in payment for war debts. His letter approving the investigation was read at a House Rules Committee hearing on a resolution offered by Representative Millard Caldwell, of Florida. Mr. Caldwell said the United States is dependent mainly on foreign imports of tin, a metal which he said was indispensable for war munition purposes. He estimated \$85,000,000 worth of tin should be imported annually and 80 percent could come from Great Britain or its colonies.

The resolution (H. Res. 357) follows:

RESOLUTION

"Resolved, That the Speaker of the House of Representatives be, and he is hereby, authorized to appoint a special committee to be composed of seven Members of the House of Representatives for the purpose of conducting an investigation of (1) the extent to which the United States is dependent upon foreign nations for its supply of tin; (2) the ownership and control of the tin resources of the world; (3) the possibility of manufacturing the munitions, motors, and other items essential to the national defense and economic welfare of the country without tin, or by the use of any known substitute; (4) the extent to which the nation or nations owning or controlling the tin resources of the world are indebted to the United States for sums due and unpaid; and (5) whether acquisition by the United States of foreign tin resources, in fair and mutually agreeable exchange for the debts owing the United States by the nations owning or controlling such resources, or otherwise, would improve the present costly and dangerously dependent position of the United States with respect to this matter; and be it further

"Resolved, That said special committee, or any committee thereof, is hereby authorized to sit and act during the present Congress at such times and places within the United States, whether or not the House is sitting, has recessed, or has adjourned, to hold such hearings, to require the attendance of such witnesses and the production of such books, papers, and documents, by subpoena or otherwise, and to take such testimony as it deems necessary. Subpenas shall be issued under the signature of the chairman and shall be served by any person designated by him. The chairman of

the committee or any member thereof may administer oaths to witnesses. Every person who, having been summoned as a witness by authority of said committee or any subcommittee thereof, willfully makes default, or who, having appeared, refuses to answer any question pertinent to the investigation heretofore authorized, shall be held to the penalties provided by section 102 of the Revised Statutes of the United States."

The International Tin Committee on May 2 decided upon a 10 percent increase in the tin export quotas for the six-month period of April to September, 1934, inclusive, raising that quota to not less than 50 percent of standard tonnages in the case of Bolivia, Malay States, Netherland East Indies, and Nigeria, according to a cablegram received in the Department of Commerce from Commercial Attaché Lynn W. Meekins, London. The export quota for Siam continues unchanged.

The recommendations of this committee are usually approved by the governments concerned.

FOLLOWING out an extensive and continuous research program in the world's principal tin using countries, the International Tin Research and Development Council has announced definite plans for carrying on this work in the United States.

On the recommendation of D. J. Macnaughtan, director of research for the International Council, the Battelle Memorial Institute, Columbus, Ohio, has been appointed to conduct research projects on tin in this country. Work is reported to be well under way, following such lines of investigation as will be of the greatest value to American manufacturers who employ tin for various purposes.

As Mr. Macnaughtan pointed out in an address to the American Tin Trade Association not long ago, an analysis of the major applications of tin in industry, reveals the fact that its chief use is in conjunction with copper, lead, and steel, and in the production of these metals the United States leads the world. A wide application in the use of tin is also found, in this country, in the form of chemical compounds affecting many industries. Technical problems, covering a number of new uses, will also be studied.

The Battelle research organization with its large technically-trained staff and modern completely equipped laboratories will cooperate closely with the New York office of the council, the Bureau of Information at London, and the Statistical Branch at The Hague.

Members of the International Council include the four leading tin-producing countries—Malaya, Bolivia, Netherlands East Indies, and Nigeria. Tin, one of the world's oldest metals, was used by the Phoenicians and relics of early civilization include implements made of tin and copper, showing a knowledge of alloys ages old. It is also known that after the Roman conquest of Britain quantities of tin were transported to Italy.

Although tin is centuries old and a metal of far-reaching, highly-developed uses, its growing importance in this scientific age has led to a broad international research program in which much new information has already been uncovered.

PERSONALS

H. W. SEAMAN, of Clinton, Iowa, was a Washington visitor May 23. He is a former president of The American Mining Congress, and was for many years closely identified with the mining industry.

E. J. NEWBAKER, vice president, Berwind White Coal Mining Company, Windber, Pa., has been elected chairman of the board of governors, the Coal Division, The American Mining Congress.

EUGENE MCAULIFFE, president, The Union Pacific Coal Co., Omaha, Nebr., at the recent meeting of the national board, was elected director of The American Mining Congress.

AMONG the directors of The American Mining Congress who attended the annual meeting of its Coal Division at Cincinnati, were Howard I. Young, president, American Zinc, Lead & Smelting Company; D. D. Moffatt, vice president, Utah Copper Company; J. B. Putnam, Pickands Mather Company; Paul Weir, vice president, Bell & Zoller Coal Mining Company; S. L. Mather, vice president, Cleveland Cliffs Iron Company; W. J. Jenkins, president, Consolidated Coal Company of St. Louis, and Erle V. Daveler, treasurer, Utah Copper Company.

C. M. LINGLE, vice president, Buckeye Coal Company, Nemacolin, Pa., has been confined to his home on account of illness. Mr Lingle was chairman of the program committee responsible for the development of the program for the recent May meeting of the Coal Division, The American Mining Congress.

J. F. CALLBREATH, secretary, The American Mining Congress, attended the meeting of the Gold Producers Association, at Denver, Colo., May 15.

J. W. ALLEN, Inspiration Copper Company, was a Washington visitor on May 15.

CHARLES E. SEGERSTROM, president, Nevada-Massachusetts Company, Sonora, Calif., attended the meeting of Gold Producers held at Denver, and will spend some little time in the east before returning to California.

W. MONT FERRY, Silver King Coalition Mines Company, Salt Lake City, Utah, has accepted the appointment as chairman of the program committee in the development of the program for the annual meeting of the Western Division of the American Mining Congress to be held at San Francisco, Calif., the week of September 24.

W. S. BOYD, vice president, Nevada Consolidated Copper Corp., has been appointed chairman of the Western Division, The American Mining Congress, by Howard I. Young, president, that organization.

G. D. COWAN, president, and Paul Weir, vice president, The Bell & Zoller Coal Mining Company, have been inspecting cleaning plants in the Pittsburgh District.

CODE AUTHORITY of the Copper Code include such important producers as L. S. Cates, president, Phelps Dodge Company; C. F. Kelley, president, Anaconda Copper Mining Company; E. T. Stannard, president, Kennecott Copper Corporation; Clinton H. Crane, president, St. Joseph Lead Company; F. H. Brownell, chairman, American Smelting & Refining Company; B. N. Zimmer, vice president, American Metals Co.; A. E. Petermann, counsel, Calumet & Hecla Mining Co.; and Geo. H. Ellis, director, United Verde Copper Company.

HENRY O'BLENNESS, Berwind White Coal Mining Company, has transferred his headquarters from Washington to New York.

GEORGE R. DELAMATER, assistant vice president, The W. S. Tyler Company, Cleveland, Ohio, has been elected to the chairmanship of the Manufacturers Section, the Coal Division, The American Mining Congress.

JOHN T. RYAN, vice president, Mines Safety Appliances Company, Pittsburgh, Pa., retiring chairman of the Manufacturers Section, American Mining Congress, is able to be about again after an indisposition of several weeks duration.

THE INCOMING OFFICERS of the Manufacturers Section, Coal Division, The American Mining Congress, elected at their recent meeting at Cincinnati are: Charles E. Officer, Sullivan Machinery Company, Chicago; Bruce G. Shotton, Hendricks Manufacturing Company, Pittsburgh, and William E. Goodman, Goodman Manufacturing Company, Chicago.

JOHN D. BATTLE, formerly traffic manager, The National Coal Association, has been appointed as executive director of that organization, to fill the vacancy created through the resignation of Carroll B. Huntress, who has become president, Appalachian Coals, Inc.

BARTON R. GEBHART has been appointed assistant to the president, Appalachian Coals, Inc. He formerly did distinguished work for the Illinois Coal Bureau, and the Portland National Cement Company.

AT A RECENT MEETING of the Westinghouse Electric International Company, George H. Bucher was elected president of the company.

R. S. MERRIAM, mining engineer, Wallace, Idaho, has been appointed as managing director for the Metropolitan Mines Corporation.

GLENN H. EDDY, advertising manager, Ohio Brass Company, Mansfield, Ohio, has been appointed chairman of a special committee for the Manufacturers Group, The American Mining Congress, to develop industry-wide interest in the plans of this group looking to greater efficiency in coal production methods.

GUY C. RIDDELL has returned to this country after spending several months in Europe.

A. G. MACKENZIE and Mrs. Mackenzie, Salt Lake City, Utah, have been in Washington and the east for several weeks, where Mr. Mackenzie has represented his state in the legislative proposals in behalf of silver.

JAMES A. LONG, until recently general manager of the Woodward Iron Company, has just been appointed southern factory representative of the Macwhyte Company, Kenosha, Wis. Mr. Long will have his headquarters at 1416 South 17th Street, Birmingham, Ala. He succeeds James A. Boope who recently succumbed to a long illness.

RALPH C. BRICKER, secretary of the Great Falls Chamber of Commerce, in Montana, was recently appointed a member of the Silver Committee, created at the conference of western Governors at Boise, Idaho. GEORGE MALONE, of Carson City, Nev., is chairman of the committee.

J. D. FRANCIS has been elected president, Island Creek Coal Company, to succeed T. B. Davis, who becomes chairman of the board. A. R. Beisel has been promoted to the vice presidency, and M. Donovan has been elected secretary and treasurer.

The study of gases in coal mines has led to the observation of coal dust, and as early as 1803, it was mentioned in connection with an explosion in England. However, nothing seems to have developed until another explosion, in September, 1844, at Haswell Colliery, England. In making a report to the government, it was stated "that it is not to be supposed that firedamp was the only fuel," and then follows a discussion of the effect of coal dust. Little was done until 1870, when it was again under discussion and a committee from an engineering society was appointed to ascertain the influence of coal dust in colliery explosions. The study of the committee seems to have resulted in the appointing of a royal commission in 1891 to "inquire into the effect of coal dust in originating or extending explosions in coal mines." Their report was published in 1894, which, in effect, was that "coal dust, even without the presence of firedamp, may cause an explosion by means of a blown-out shot or other violent inflammation."

Another royal commission was appointed in 1906 and elaborate tests were made on coal dust at Altopps, England, and a report was made in 1910 by Sir W. E. Garforth and others.

This report gave results of using inert material, such as stone dust, in allaying coal dust and destroying its effect in an explosion of firedamp.

While these tests were being conducted in England, there were a number of disastrous explosions in coal mines in the United States, especially in 1907, when almost 1,000 miners lost their lives.

The result was that the Bureau of Mines was made active, and an experimental mine at Brucetown, Pa., was opened.

Tests were made on coal dust, similar to those being made in England, with results that have greatly contributed to the safety of dusty mines.

Hundreds of tests have been made and now it is known how much rock dust is necessary for different kinds of coal, to reduce the dust below the danger point.

The Bureau of Mines has contributed largely to safety through its safety division, by the teaching and training workers in first aid and rescue work.

The above brief review indicates that the great accomplishments in safety in coal mines have been brought about through scientific investigations and followed by practical application. The mining industry needs to continue investigations, as there is much to be accomplished, in order to improve the safety record in coal mining.

The fact that generally the largest percentage of accidents in coal mines is due to falls of roof it would seem intensive study of roof conditions would bring results. Haulage also carries a high rate of accidents, which, no doubt, could be reduced by a careful survey of conditions incident to haulage.

The formation of safety committees for the purpose of discussing accidents, the teaching of first aid and rescue work, have certainly been the means of making everyone connected with coal mining more safety minded, which is conducive to good results. The mining industry needs such Governmental institutions as the Bureau of Mines, to lead in safety measures and conduct re-

search work for the betterment of the industry.

The coal mining industry needs such organizations of mining men as the American Mining Congress to stimulate interest in safety and improved mining methods.

Coal Production In Ohio, 1933

(Continued from page 18)

divided among the truckers and drivers. According to the best information available to the writer, the wages of the miners and truckers, under this system, was frequently one dollar per day or even less. Of course, many became bankrupt, but others, who knew no more about computing costs, stepped into their shoes and the ruinous cycle went merrily on. Sad experiences began to improve these conditions about a year ago. The bituminous coal code has been a powerful influence toward stabilizing this industry and decreasing ruinous sales practices. Truck-mine men, according to Mr. Leckrone, are reporting more profitable business during the past winter.

The problem of the truck-mine and its bad effects on the domestic coal market is, however, not yet solved. The preparation and quality of the coal sold by truck-mine needs to be improved and standardized. Most of the Ohio truck-mines are drift mines. Frequently the cover is shallow and weathered or cropy coal extends a considerable distance from the outcrop. All too frequently, such cropy coal has been marketed. Only a few of the truck-mines have proper screening and cleaning facilities. Most of them have gravity screens and some depend entirely on forking for preparation. The average householder is no judge of coal; if he gets cropy coal, poorly screened or dirty coal, he does not realize that the trouble is with the mine and not the coal seam. The writer knows of instances where householders bought truck coal because it was cheap and then proceeded to "damn" all coal from the district from which it came. Conditions are reported to be improving, but such practices should be stamped out at once. Their continuation will prejudice domestic consumers against all Ohio mined coal and will prove a serious handicap to those producers, both railroad and truck-mines, who sell a well prepared, quality coal. Truck-mine operators' associations should be able to do much to correct the undesirable features of truck coal marketing. City ordinances requiring certified weights, certification of preparation and control over retailing may become necessary.

The question of production and trucking costs is difficult to answer. Admittedly, many of the truck-mine operators do not know how to figure costs. Undoubtedly, much of their coal has been and is being sold at less than the cost of production and delivery. Some of the better class operators report their costs at from less than \$1 per ton to \$1.40 per ton, under the wage scale in effect prior to April 1, 1934.

Trucking costs vary widely, and accurate figures are difficult to obtain. Some claim that with steady operation,

using 10-trucks 16 hours per day and changing drivers they can haul coal for one and one-half cents per ton mile and charge 100 percent depreciation on a new truck in one year. Mr. Leckrone says that average trucking operations probably cost four to five cents per ton mile.

Truck miners seem to believe that they can compete within a radius of 100 miles from the mines with the rail shipped coal, which must be unloaded and handled through retail yards. During March of this year, the writer's friends reported to him that truck-mine lump coal was being offered delivered at the house in Columbus for \$4.50 per ton. This coal was being trucked from mines about 75 miles away. The lump coal is not over 60 to 65 percent of the coal as mined. They have had practically no market for slack. It does not seem possible that there can be a profit in the business at such a price.

Anthracite Takes a Turn For the Better

(Continued from page 13)

the stabilizing of employment during the normally dull months of the summer season. The hand to mouth policy of buying which has been followed for the past few years resulted in difficulties in filling orders for immediate delivery when occasion demanded.

One of the promising features for the future of anthracite has been the development in recent months of several new units designed for the burning of anthracite automatically, and under thermostatic control, not only for house heating but for kitchen ranges and hot water service. With these devices perfected and placed in production, the industry will be in much better position to combat the claims of convenience made by oil and gas by offering automatic equipment having greater dependability and a wider range of capacity under any and all weather conditions.

To summarize, it appears that anthracite faces the future in a better psychological frame of mind than has been the case for a number of years. Its morale has been bolstered considerably by the return of what a decade or more ago would have been considered a normal winter. It realizes the extent of its problems and the possibility of their cure better than ever before. It, therefore, looks to the future with a spirit of optimism and with the confidence that anthracite will continue to prove the most satisfactory and dependable form of domestic heating for many years to come.

ORDERS received by the General Electric Company during the first quarter of 1934 amounted to \$38,148,654 compared with \$25,511,644 for the corresponding period of 1933, an increase of 50 percent, according to an announcement by Gerard Swope.

HAVE YOU HEARD—?

FOR PRACTICALLY ONE MONTH repayments to the Reconstruction Finance Corporation have averaged \$3,000,000 a day. This figure is considerably above that for previous months and is a sign of recovery not generally known.

PRESIDENT ROOSEVELT's silver message was commended "as a wise and forward step" by F. H. Brownell, chairman of the American Smelting & Refining Co., and Frank A. Vanderlip, before a recent luncheon meeting of the New York University Men in Finance Club.

DR. FROWEIN, of Ludwigshafen, who has studied iron reserves for the past few years, predicts to a convention of German chemists that within 64 years the world will be without sufficient iron ore to meet its need. He has found an average yearly of 3½ percent increase in the use of the metal.

FARM INCOME for the first four months of 1934 shows increase over that of a year ago. Official estimate of farmers' cash income from sales of products in April is \$381,000,000, making the total for the first four months \$1,598,000,000 compared with \$1,184,000,000 last year. In addition, rental and benefit payments amounted to over \$100,000,000.

ONE BILLION TWO HUNDRED SEVENTY-THREE MILLION DOLLARS has been loaned to farmers by the Farm Credit Administration during the first year of its operations. This Federal lending agency was organized on May 27, 1933, when it launched a national farm debt refinancing program under which approximately \$791,000,000 of mortgage loans have been made to date. It also created at that time 640 production credit associations designed to provide farmers and stockmen with short-term loans at a low interest rate. The production credit associations, organized by the Farm Credit Administration, through loans and discounts obtained from Federal intermediate credit banks, have already made loans of approximately \$27,300,000. Loans amounting to practically \$34,000,000 have been made by the twelve regional banks for cooperatives and the Central Bank for Cooperatives in Washington, D. C.

THE FIRST STEP in putting into effect the NRA code for truck operators is the nation-wide registration of 300,000 truck operators, using about 500,000 vehicles.

A BULLETIN warning prospective investors against buying gold mining stocks without thorough investigation and listing the requirements which should be met, has been issued by the National Better Business Bureau.

ACCORDING TO FIGURES of the Amtorg Trading Corporation, Russia's purchases of American goods continued to show a sharp upward trend last month. Purchases in April were \$2,045,000, compared with \$1,034,000 in March and \$163,000 in April, 1933. So far this year purchases by Russia amount to \$4,235,000, as against \$695,000 for the same period a year ago.

COMMISSIONER OF INTERNAL REVENUE HELVERING reports that the average cost of collecting \$100 of internal revenue during the first 10 months of this fiscal year has been reduced to \$1.143, compared with \$1.853 for the 1933 fiscal year. Total collections for the 1934 fiscal year to April 30 amounted to \$2,115,702,953, compared with \$1,253,484,092 for the same months of the 1933 fiscal year.

THE UNITED STATES AND CANADA led all countries of the world in increase in industrial activity in the first quarter of 1934 as compared with 1933, according to an announcement of the League of Nations economic section. The United States increase was reported as 30 percent over the first quarter of 1933; Canada's increase was 40 percent.

THE AMERICAN CONSULATE-GENERAL in London has reported to the Commerce Department that a new \$5,000,000 corporation, the National Coke and Oil Co., Ltd., is planning to build 20 distillation plants in Great Britain for the distillation of gasoline from coal. The corporation's aim will be 20,000 gallons of gasoline a day.

EMPLOYMENT TO THOUSANDS OF MEN is anticipated through the protection of the timber resources of the United States as planned under the lumber and timber products code being submitted to the NRA. The code includes provisions for the prevention of forest fires during and immediately after logging operations, the preservation of immature trees and young growth during logging, the restocking of land after it has been cut over, and increases in the fire-fighting units, with details of the rules varied to suit conditions in the forests in different parts of the country.

POSTMASTER GENERAL FARLEY has announced that the cost of air mail service to the Federal Government during the next fiscal year will be approximately one-half of what it was on the basis of the rates paid this year. The annual air mail pay for the new system will be \$7,700,238, as compared with \$19,400,264 in the fiscal year 1933, and with approximately \$14,000,000 for the present fiscal year which ends June 30.

A NEW INEXPENSIVE TWO-SEATED AIRPLANE, so economical to operate that it may prove a cheaper mode of transportation than the automobile, may soon be put into production by American airplane manufacturers, according to the *United States News*. The Department of Commerce has requested bids for 25 planes of this type for the use of its aeronautical inspectors, specifying that they must have greater visibility for pilot and passenger than any planes the industry has heretofore been called upon to produce and must have maximum safety features.

FIVE vice presidents and one commercial vice president were elected by the board of directors of the General Electric Company at the meeting on May 25 in New York City, as follows: J. E. Kewley, of Cleveland, vice president in general charge of the incandescent lamp department; R. C. Muir, of Schenectady, vice president in charge of the engineering department; C. E. Tullar, of Schenectady, vice president in charge of the patent department; E. O. Shreve, of Schenectady, vice president in association with Vice President J. G. Barry, in the commercial activities of the apparatus and supply business of the company; H. L. Andrews, of Erie, vice president in charge of the activities connected with the electrification of steam railroads; W. O. Batchelder, of Chicago, commercial vice president in charge of the commercial activities of the Chicago district.

PRESIDENT ROOSEVELT has announced the appointment of a Planning Committee for Mineral Policy. Secretary Ickes is acting chairman. Members of the committee are as follows: H. L. Ickes, Secretary of the Interior; Dr. C. K. Leith, University of Wisconsin; H. Feis, State Department; J. W. Furness, Minerals Division, Bureau of Foreign and Domestic Commerce; W. C. Mendenhall, U. S. Geological Survey; W. C. Taylor; Lt. Col. E. R. Harris, War Department; Scott Turner, director, Bureau of Mines; F. A. Silcox, U. S. Forestry Service; W. L. Thorpe, Bureau of Foreign and Domestic Commerce; and Leon Henderson, NRA Research and Planning Division. The committee is to study fundamental problems relating to future consumption of important minerals, relationship of Federal and state control, and coordinations of appropriations in relation to mining.

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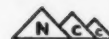


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NEWS OF MANUFACTURERS

AN 80-PAGE publication entitled, "Westinghouse Diesel Electric Locomotives," has recently been announced by the Westinghouse Electric & Manufacturing Company. This book tells everything about Westinghouse Diesel engines and 15 standard sizes of Diesel electric locomotives. Specifications, outline drawings, performance curves, comparative operating data, and an impressive exhibit of Westinghouse locomotives in service are included in this impressive publication. Copies may be obtained from the nearest district office or direct from the advertising department, East Pittsburgh, Pa.

INGERSOLL-RAND has recently doubled its line of two-stage, air-cooled portable air compressors. All six sizes are now available with oil-engine drive, as well as with gasoline-engine drive. Full information in Bulletin No. 2100, obtainable from Ingersoll-Rand Company, 11 Broadway, New York City.

THE TIMKEN ROLLER BEARING CO., Canton, Ohio.—One of the important features of the new streamlined Burlington train which is now starting its maiden trip is the fact that Timken bearings are used on all axle journal boxes. The use of anti-friction bearings throughout this train makes an important contribution to the attainable speed and the ease of riding, in addition to the lower maintenance and operating cost effected by doing away with friction.

A NEW GENERAL CATALOG of 1,024 pages, with list prices effective April 1, has recently been completed and distributed by Link-Belt Company, Chicago, Philadelphia, San Francisco.

A GENERAL-PURPOSE welding electrode, designated as the Type W-22, has been added to the General Electric line of arc welding electrodes. The new electrode is of the heavily coated or shielded-arc type and produces welds of the quality required for Class I pressure vessels according to the A. S. M. E. Boiler Construction Code. Its distinctive feature is that it may be used in any position, i.e., for flat, vertical, or overhead welding, and at the same time has deep penetrating properties. It is therefore equally suitable for butt and fillet welds.

LINK-BELT COMPANY has just published an interesting book, "Firing Method Modernized For Profit," giving a comparison of hand firing and controlled automatic underfeed firing of boilers from 10 to 250 B.H.P. This book illustrates in graphic and pictorial form such features as smoke elimination, uniform temperatures and pressures, coal savings, firing efficiency, etc., etc. A copy can be obtained by asking for book No. 1419 and addressing Link-Belt Company, 2410 West 18th Street, Chicago, Ill.

THREE NEW MINING cables have been announced by the General Electric Company. The new armored type telephone cable, recommended for use in mine-telephone service where the wires must be protected from extreme hazards such as sharp rocks or blows, etc., resists damage because of the use of a galvanized-steel interlocking armor of the same type used on G-E type BX armored cable. An application of asphalt and jute both over and under the armor protects it from deterioration. A lead sheath protects the cable from moisture and a specially developed rubber compound, which has a low electrostatic capacity, facilitates its use in telephone communication.

Available in all standard sizes and types for 600-volt service, the new G-E tellurium-compounded all-rubber mining cable is jacketed in rubber similar to the tread of an automobile tire. The process improves the rubber, toughens it, enables the jacket to resist abrasion, and increases its life. The cable is intended for such rough usage as running on and off gathering reels, dragging after mining machinery and electric shovels, where it is likely to be hit by picks and shovels, or run over by trucks, tractors, and cars.

G-E Glyptal-cloth insulated cable employs glyptal, a synthetic resin with flexible molecules, as a base. It is unaffected by oil or gasoline, withstands high temperatures, is tough and flexible, and is able to withstand such mechanical abuse as bending, compression, and abrasion. Cable insulated with glyptal cloth is intended for use for low- and medium-voltage motor leads, apparatus cable, transformer leads, leads for coils and control devices, etc.

THE STATEMENT of operations just issued by the Westinghouse Electric & Manufacturing Company for the first quarter of 1934 shows the orders received total \$20,237,588. This compares with orders received of \$12,847,801 for the corresponding quarter of 1933 and represents an increase of 57 percent. The bookings for the month of March were in excess of any month since September, 1931.

American Zinc Institute Meets

THE sixteenth annual meeting of the American Zinc Institute was held at the Hotel Statler, St. Louis, Mo., April 30, and May 1, 1934. Address of welcome was made by Mr. Arthur Thacher, of St. Louis, long identified with the zinc industry, to which Mr. Henry S. Wardner, New Jersey Zinc Company, made response. An interesting review of world zinc conditions was presented by Oliver Roskill, of London, England, and is found briefly in this issue.

Major discussion at the meeting centered around the Code of Fair Competition for the zinc industry. Julian D. Conover, secretary of the Institute presented the "Developments of the Zinc Code," and Ralph M. Roosevelt, Eagle Pitcher Lead Company, presented "Organization of the Zinc Institute and its

relation to the Proposed Code." Mr. Roosevelt, who is president of the Institute said that the committee in charge of preparing the code had already held something like 27 conferences, and had already discussed the matter with various administrators. He pointed out that every industry must have special consideration of its problems, and that a "blanket code" for minerals was unfeasible. A point of difference between Government officials and men of the industry was the factor of hours of work, the Government contending that no employee should be permitted to work more than 40 hours weekly, while representatives of the zinc industry believe that the maximum of 40 hours per week should be averaged over a three months period.

Mr. Walter A. Janssen, Deputy Administrator, National Recovery Administration, made the principal address on the Government and codes at the Monday afternoon session, which was followed by the annual dinner and smoker, at which John A. Robinson, Commerce Mining and Royalty Company, acted as toastmaster and Lawrence McDaniel, of St. Louis, was principal speaker.

Better galvanizing program was the feature of the Tuesday session, with the following papers presented:

The "Seal of Quality" Campaign in the Field, Charles Matthews, field representative, American Zinc Institute; "Getting the Facts About Zinc Coating," G. C. Bartells, technical representative, American Zinc Institute; "Pushing a Good Thing Along," K. J. T. Ekblaw, agricultural engineer, American Zinc Institute; "Consolidating the 'Seal of Quality' Campaign," Julian D. Conover, secretary, American Zinc Institute; "The Steel Man's Viewpoint of Better Galvanizing," J. L. Schueler, Continental Steel Corporation; "The Consumer's Interest in Better Galvanizing," H. W. Riley, New York State College of Agriculture.

A Review of Zinc Mining Conditions closed the meeting, with papers by the following leading representatives of the industry: Washington, L. P. Larsen, Pend Oeuvre Mines and Metals Company; Idaho, D. A. Callahan, Callahan Zinc-Lead Company; Montana, W. B. Daly, Anaconda Copper Mining Company; Nevada-Utah, E. H. Snyder, Combined Metals Reduction Company; New Mexico-Arizona, E. H. Wells, New Mexico School of Mines; Oklahoma-Kansas-Missouri, M. D. Harbaugh, Tri-State Zinc Lead Ore Producers Association; Wisconsin, R. B. Keating, Vinegar Hill Zinc Company; Tennessee, M. H. Newman, American Zinc Lead & Smelting Company; Virginia-New Jersey, R. B. Paul, New Jersey Zinc Company; New York, C. R. Ince, St. Joseph Lead Company; Manitoba, R. E. Phalen, Hudson Bay M. & S. Company; and British Columbia, S. G. Blaylock, Consolidated M. & S. Company.

A special meeting of the board of directors was held on Tuesday. Ralph M. Roosevelt, vice president, Eagle Pitcher Lead Company, was reelected president of the Institute, and Julian D. Conover was reelected secretary.

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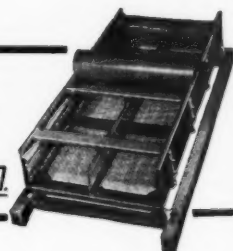
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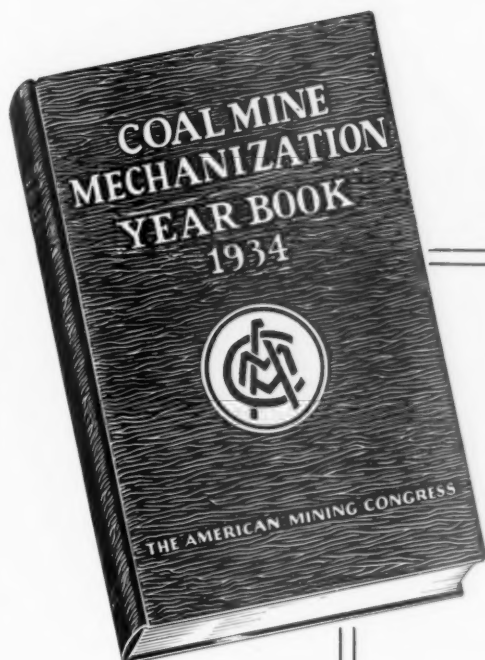
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Surface Preparation—Dedusting—Wet and Dry Washing—Wet Cleaning—Sampling—Scouring Device—Preparation Plants.
Safety—Promotion of Safety—Safety Work and Practices—Protective Clothing—Educational Work.
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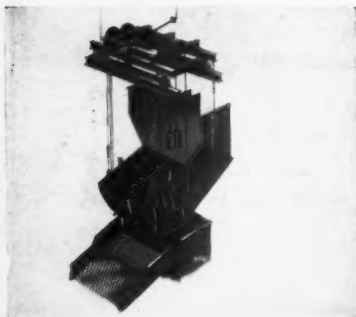
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Weigh boxes and chutes—electrically, or counter-balance operated, to suit conditions.

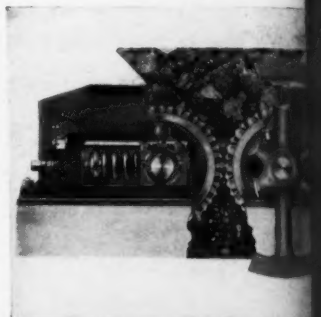


FOR over forty years Link-Belt engineers have specialized in aiding operators to prepare clean, properly sized coal, *at the lowest cost per ton.* This long diversified experience, and the facilities of our conveniently located plants and offices, are always at your service.

You can get from Link-Belt practically anything you may need, from a piece of shafting, to the engineering, manufacture and installation of a complete preparation plant, from the foundations up . . . so complete is the Link-Belt line. You can also get genuine Link-Belt replacement and repair parts from extensive stocks.

CRUSHING

Any coal crusher you may need. Single, two or four roll; Hammer-mill; ring type; or Bradford breaker.



LINK-BELT COMPANY

300 W. Pershing Rd., CHICAGO

Philadelphia
St. Louis

Denver
Huntington, W. Va.

Seattle
Pittsburgh
Kansas City, Mo.

Wilkes-Barre
Toronto

4993

DUMPING

Electrically driven and controlled, and gravity-operated dumps, as well as mine car feeders.



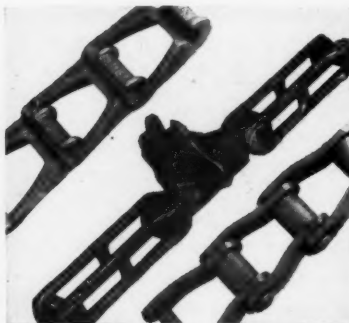
CLEANING

We furnish wet or dry cleaning equipment, or both in combination, to suit the size and character of the coal, and to meet market conditions.



CHAINS

All types and sizes of Steel, Malleable Iron and Promal Chains; Silent Chain and Roller Chain Drives.



LOADING

Loading booms with latest refinements, for the easy, gentle lowering of coal to cars.



CONVEYING

Conveyors of belt, apron, flight, pan, chain and other types, for every capacity and service.



PICKING

Picking tables of various types, for every size plant, and to suit all conditions.



SIZING

Screens of the shaker, vibrating, cylindrical, bar, disc and grizzly types, to meet any requirement.



DEDUSTING

The Link-Belt Simon-Carves dust extractor—a simple, effective, economical unit.



LINK-BELT

CLEANING-SIZING-HANDLING EQUIPMENT
COMPLETE LINE OF ACCESSORIES

you
two
mer-
or

QUIPME
ORIES